

Update to "Master
Traffic Impact Study"

Unresolved

TRAFFIC IMPACT STUDY

For

**Flying Horse North
El Paso County, Colorado**

Provide certification
page per ECM B.8

March 2022
Revised:
July 2022

Prepared for:

Flying Horse Development
2138 Flying Horse Club Drive
Colorado Springs, Colorado 80921

Prepared by:



SM ROCHA, LLC

TRAFFIC AND TRANSPORTATION CONSULTANTS

8703 Yates Drive, Suite 210
Westminster, Colorado 80031
(303) 458-9798

6 South Tejon Street, Suite 515
Colorado Springs, Colorado 80903
(719) 203-6639

Project Engineer/Manager:
Mike Rocha, Principal
Brandon Wilson, EIT

Engineer in Responsible Charge:
Fred Lantz, PE



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I. Introduction

Project Overview

This traffic impact study is provided as a planning document and addresses the capacity, geometric, and control requirements associated with the development entitled Flying Horse North.

This proposed mixed-use development consists of a variety of residential, commercial, recreational, and lodging land uses. The development is located along Old Stagecoach Road between State Highway 83 and Black Forest Road in El Paso County, Colorado.

Study Area Boundaries

The study area to be examined in this analysis encompasses the Hodgen Road intersections with State Highway 83 and Black Forest Road, the Old Stagecoach Road intersections with State Highway 83, Shortwall Drive, Allen Ranch Road, and Black Forest Road, the North Gate Boulevard intersection with State Highway 83, and the Shoup Road intersections with State Highway 83 and Black Forest Road.

Figure 1 illustrates location of the site and study intersections.

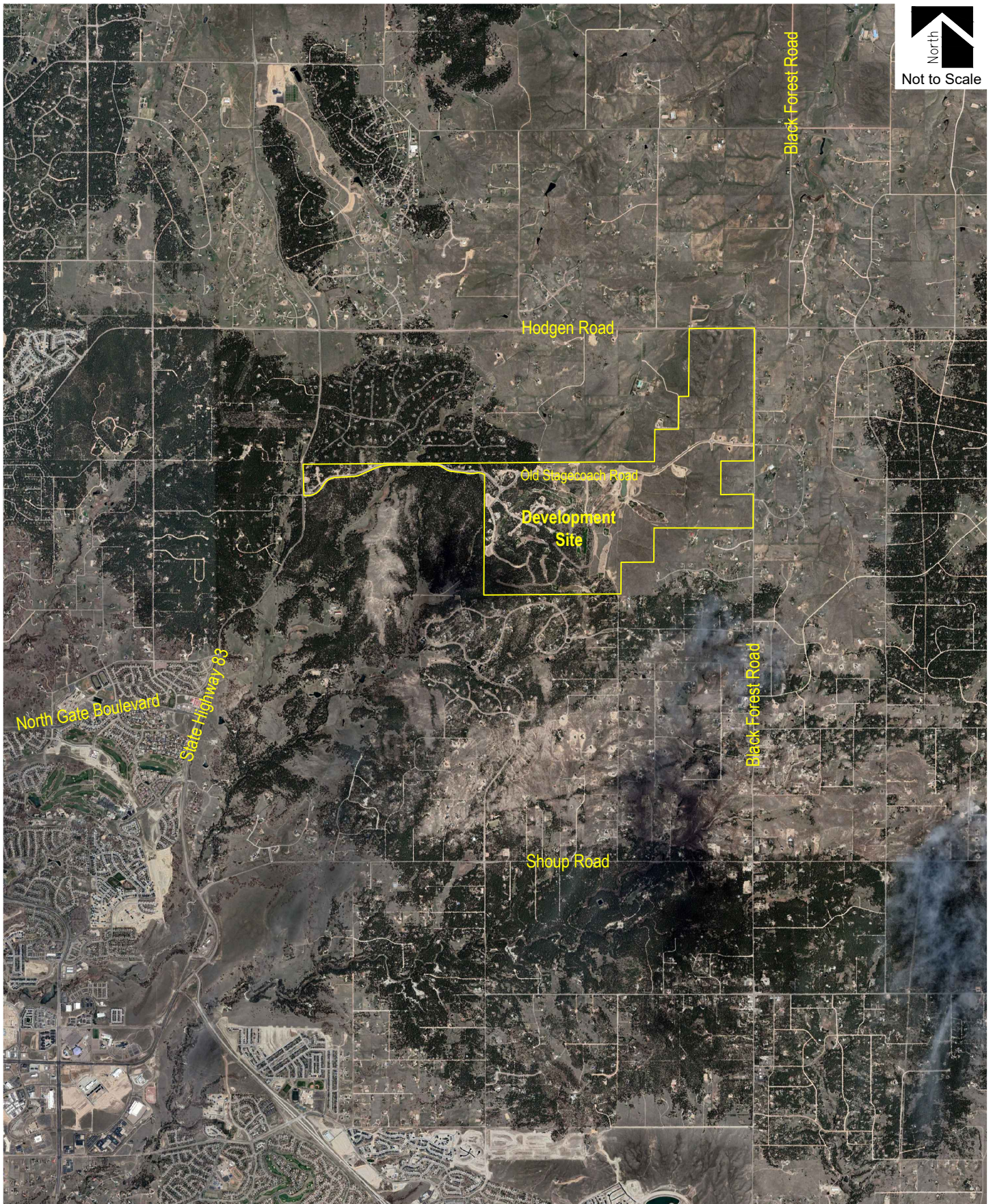
Site Description

Land for the development is partially vacant and surrounded by a mix of open space, recreational, and residential land uses. The occupied portion of land development is currently the Flying Horse North Golf Course, which is expected to become an ancillary use to the proposed resort hotel.

The proposed development's sketch plan is conceptual and not all land uses have been determined. However, for purposes of this analysis, there is assumed to be construction for a maximum of 1,571 single-family housing dwelling units, a resort hotel supporting 225 rooms, an approximate 46,800 square foot fitness center, and approximately 185,100 square feet of commercial land use.

Considering the conceptual nature of the proposed development, future access will generally include multiple access drives along all exterior roadways bordering the proposed development and along Old Stagecoach Road. For purposes of this analysis, primary points of entry to the overall development area are provided at the following locations: one full-movement access serving as the east leg of the State Highway 83 and Stagecoach Road intersection, and one full-movement access serving as the west leg of the Black Forest Road and Old Stagecoach Road intersection.

For purposes of this study, it is anticipated that development construction would be completed by end of Year 2027. A sketch plan, as prepared by HR Green, Inc., is shown on Figure 2. This plan is provided for illustrative purposes only.



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Figure 1
SITE LOCATION



Not to Scale

LEGEND

ESTATE LOTS (5 AC)

ESTATE LOTS (2.5 AC)

LOW DENSITY

MEDIUM DENSITY

BRANDED FLATS (HOTEL)

COMMERCIAL

GOLF CLUB, FITNESS CENTER, RESTAURANT/BAR (HOTEL)

HOTEL COMPLEX

CLUBHOUSE

ROADWAY

DETENTION

SITE BOUNDARY

HOTEL PARCELS

SCHOOL DISTRICT LINE

FHN TRAIL

PUBLIC COUNTY TRAIL

DRAINAGE WAY

PARK/POCKET PARK


FITNESS CENTER

POTENTIAL FIRE STATION

PROPOSED DETENTION

LAND USE SUMMARY				
LAND USE CATEGORY	ACREAGE	PERCENTAGE	DUI/AC	UNITS
ESTATE LOTS (5 ACRES)	118.3 AC.	13.0%	0.2	27
ESTATE LOTS (2.5 ACRES)	152.7 AC.	16.7%	0.32	49
LOW DENSITY RESIDENTIAL	332.9 AC.	36.5%	1.9	633
MEDIUM DENSITY RESIDENTIAL	46.0 AC.	5.0%	3.0	138
ESTIMATED OPEN SPACE	204.0 AC.	22.4%	N/A	N/A
GROSS RESIDENTIAL SUB-TOTAL	853.9 AC.	71.2%		846
HOTEL/COMMERCIAL ACREAGE (+/-)				
HOTEL ROOMS/GOLF CASITAS	26.6 AC.	2.9%	N/A	225
BRANDED FLATS	5.6 AC.	0.6%	9.0	50
GOLF CLUB, RESTAURANT/BAR, GOLF AMENITIES (HOTEL)	11.0 AC.	1.2%	N/A	N/A
ESTATE CLUBHOUSE (HOTEL)	24.4 AC.	0.3%	N/A	N/A
COMMERCIAL	9.1 AC.	1.0%	N/A	N/A
FITNESS CENTER	4.1 AC.	0.4%	N/A	N/A
TOTAL	912.7 AC	100.0%		1121

NOTE: OPEN SPACE INCLUDES PARKS, POCKET PARKS, DETENTION, DRAINAGE, CORRIDOR, GENERAL OPEN SPACE, ELEMENTS AND LANDSCAPE BUFFER.



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Figure 2

SKETCH PLAN

July 2022

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Existing and Committed Surface Transportation Network

Within the study area, State Highway 83 is the primary roadway that will accommodate traffic to and from the proposed development. Secondary roadways include Hodgen Road, Black Forest Road, Shoup Road, Old Stagecoach Road, North Gate Boulevard, Ridge Run Drive, Shortwall Drive, and Allen Ranch Road. A brief description of each roadway, based on the County's 2016 Major Transportation Corridors Plan (MTCP)¹ and Engineering Criteria Manual (ECM)², as well as the City's Major Thoroughfare Plan³, is provided below:

State Highway 83 is a north-south, state-owned, principal arterial roadway having two to four through lanes (one to two lanes in each direction) with a combination of shared and exclusive turn lanes at the intersections within the study area. The Colorado Department of Transportation (CDOT) categorizes the adjacent segment of State Highway 83 as a Regional Highway (R-A) north of Old North Gate Road and an Expressway, Major Bypass (E-X) south of Old North Gate Road. State Highway 83 provides posted speed limits of 55 to 60 MPH.

Hodgen Road is an east-west, El Paso County-owned roadway having two through lanes (one lane in each direction) with a combination of shared and exclusive turn lanes at the intersections within the study area. East and west of State Highway 83, the County's 2016 MTCP categorizes Hodgen Road as a minor arterial and major arterial roadway, respectively. Hodgen Road provides a posted speed limit of 55 MPH.

Black Forest Road is a north-south, El Paso County-owned, minor arterial roadway having two through lanes (one lane in each direction) with shared turn lanes at the intersections within the study area. Black Forest Road provides posted speed limits of 40 to 45 MPH. Black Forest Road extends north of Hodgen Road as an unpaved, private roadway. Black Forest Road continues as a public roadway north of Hodgen Road, offset approximately one-quarter mile east, and classified as a collector roadway.

Ridge Run Drive is a north-south, El Paso County-owned, local roadway having two through lanes (one lane in each direction) with a combination of shared and exclusive turn lanes at the intersection within the study area. Ridge Run Drive does not provide a posted speed limit. However, per Section 2.3.2, Table 2-5 of the County's ECM, Ridge Run Drive is assumed to have a design speed limit of 30 MPH. Ridge Run Drive ends at Hodgen Road and continues north as Black Forest Road.

Shoup Road is an east-west, El Paso County-owned roadway having two through lanes (one lane in each direction) with a combination of shared and exclusive turn lanes at the intersections within the study area. The County's 2016 MTCP categorizes Shoup Road as a minor arterial roadway while the City's Major Thoroughfare Plan categorizes Shoup Road as a principal arterial roadway. Shoup Road provides posted speed limits of 30 to 45 MPH. Shoup Road ends at State Highway 83 creating a signalized, T-intersection.

¹ El Paso County 2016 Major Transportation Corridors Plan Update, Felsburg Holt & Ullevig, December 2016.

² El Paso County Engineering Criteria Manual, El Paso County, October 2020.

³ Major Thoroughfare Plan, City of Colorado Springs, August 2011.

Modify the statement.

North Gate Boulevard is an east-west, City of Colorado Springs-owned roadway having four through lanes (two lanes in each direction) with exclusive turn lanes at the intersection within the study area. The City's Major Thoroughfare Plan categorizes the adjacent segment of North Gate Boulevard as a principal arterial roadway and provides a posted speed limit of 40 MPH. The City's jurisdiction over of North Gate Boulevard ends at State Highway 83 and continues east as a private roadway.

Old Stagecoach Road is an east-west, El Paso County-owned roadway having two through lanes (one lane in each direction) with a combination of shared and exclusive turn lanes at the intersections within the study area. Old Stagecoach Road is unclassified in both the County's 2016 MTCP and the City's Major Thoroughfare Plan. However, per Sections 2.2.4 and 2.3.2 of the County's ECM, the roadway's estimated right-of-way (ROW) width, its connection from State Highway 83 to Black Forest Road, and its posted speed limit of 35 MPH, Old Stagecoach Road is assumed to be classified as a rural minor collector roadway. Old Stagecoach Road ends at Black Forest Road continuing east as Terra Ridge Circle and ends at Shortwall Drive continuing west as Stagecoach Road.

Shortwall Drive is a north-south roadway having two through lanes (one lane in each direction) with shared turn lanes at the intersection within the study area. Shortwall Drive provides a posted speed limit of 35 MPH and is unclassified in both the County's 2016 MTCP and the City's Major Thoroughfare Plan. However, per Section 2.3.2, Table 2-5 of the County's ECM and the roadway's posted speed limit, Shortwall Drive is assumed to be classified as a rural minor collector roadway.

Allen Ranch Road is a north-south roadway having two through lanes (one lane in each direction) with shared turn lanes at the intersection within the study area. Allen Ranch Road is unclassified in both the County's 2016 MTCP and the City's Major Thoroughfare Plan. However, per Section 2.2.4 of the County's ECM and the roadway's estimated ROW width, Allen Ranch Road is assumed to be classified as a rural local roadway with a design speed limit of 30 MPH.

Shoup?

The study intersections of State Highway 83 with Hodgen Road, North Gate Boulevard, and Hodgen Road, as well as the intersection of Black Forest Road with Shoup Road, are signalized. The Old Stagecoach Road intersections with Shortwall Drive and Allen Ranch Road operate under roundabout conditions. All other study intersections operate under a stop-controlled condition. A stop-controlled intersection is defined as a roadway intersection where vehicle rights-of-way are controlled by one or more "STOP" signs.

Pursuant to the County's 2016 MTCP, State Highway 83 is envisioned to be widened from four to six through lanes from Shoup Road to Old North Gate Road and widened from two to four through lanes from Old North Gate Road to Hodgen Road. Additionally, the jogged alignment of Black Forest Road across Hodgen Road will be eliminated, allowing consistent alignment across the roadway. However, the County's 2016 MTCP does not mention when these improvements will occur. As such, these improvements are assumed to occur by Year 2042. This is understood to provide for a conservative analysis.

II. Existing Traffic Conditions

Morning (AM) and afternoon (PM) peak hour traffic counts were collected at the following intersections:

- State Highway 83 / Hodgen Road
- State Highway 83 / Stagecoach Road
- State Highway 83 / North Gate Boulevard
- State Highway 83 / Shoup Road
- Ridge Run Drive / Hodgen Road
- Black Forest Road / Hodgen Road
- Black Forest Road / Old Stagecoach Road
- Black Forest Road / Shoup Road
- Stagecoach Road / Shortwall Drive
- Old Stagecoach Road / Allen Ranch Road

Average daily (24-hour) traffic volumes were collected along the following roadways:

- Black Forest Road
- Hodgen Road
- Stagecoach Road
- Old Stagecoach Road
- Shoup Road

Counts were collected on Tuesday, November 30, 2021, with AM peak hour counts being collected during the period of 7:00 AM to 9:00 AM, and PM peak hour counts being collected during the period of 4:00 PM to 6:00 PM.

Considering how traffic counts were collected one week after the Thanksgiving holiday, and due to the possible effects of the COVID-19 pandemic, collected traffic counts may not accurately represent daily and peak hour traffic volumes under normal 24-hour and peak traffic conditions. Therefore, a method was used in order to validate collected traffic data, or to more accurately represent existing traffic volumes under normal conditions. The methodology used included referencing historical traffic count data along Hodgen Road, Shoup Road, and Black Forest Road provided by CDOT's Traffic Count Database System (TCDS)⁴. These referenced average daily traffic (ADT) volumes were then grown to Year 2022 at a compounded annual growth rate of three percent.

The three percent compounded annual growth rate was determined using population growth estimates provided by the Pikes Peak Area Council of Governments' (PPACG) 2045 Long Range Transportation Plan⁵, as well as traffic data provided by CDOT's Online Transportation Information System (OTIS) for the adjacent segment of State Highway 83.

⁴ Transportation Data Management System, MS2, 2021.

⁵ Moving Forward 2045: Pikes Peak Area Regional Transportation Plan, Pikes Peak Area Council of Governments, January 2020.

Newly collected traffic counts were then compared to CDOT's calculated Year 2022 ADT volumes. It was determined that newly collected traffic counts represent higher traffic volumes. As such, no holiday nor COVID-19 adjustments were considered in this analysis.

Newly collected counts are shown on Figure 3. Existing intersection geometry is shown on Figure 4.

Existing signal timing parameters for the State Highway 83 intersections with Hodgen Road, North Gate Boulevard, and Shoup Road, as well as the intersection of Black Forest Road with Shoup Road, were obtained from County, City, and CDOT Staff. Existing signal timing parameters were used throughout this study to the best extent possible in order to remain consistent with existing signal coordination plans. County, City, and CDOT signal timing information received is included for reference in Appendix A.

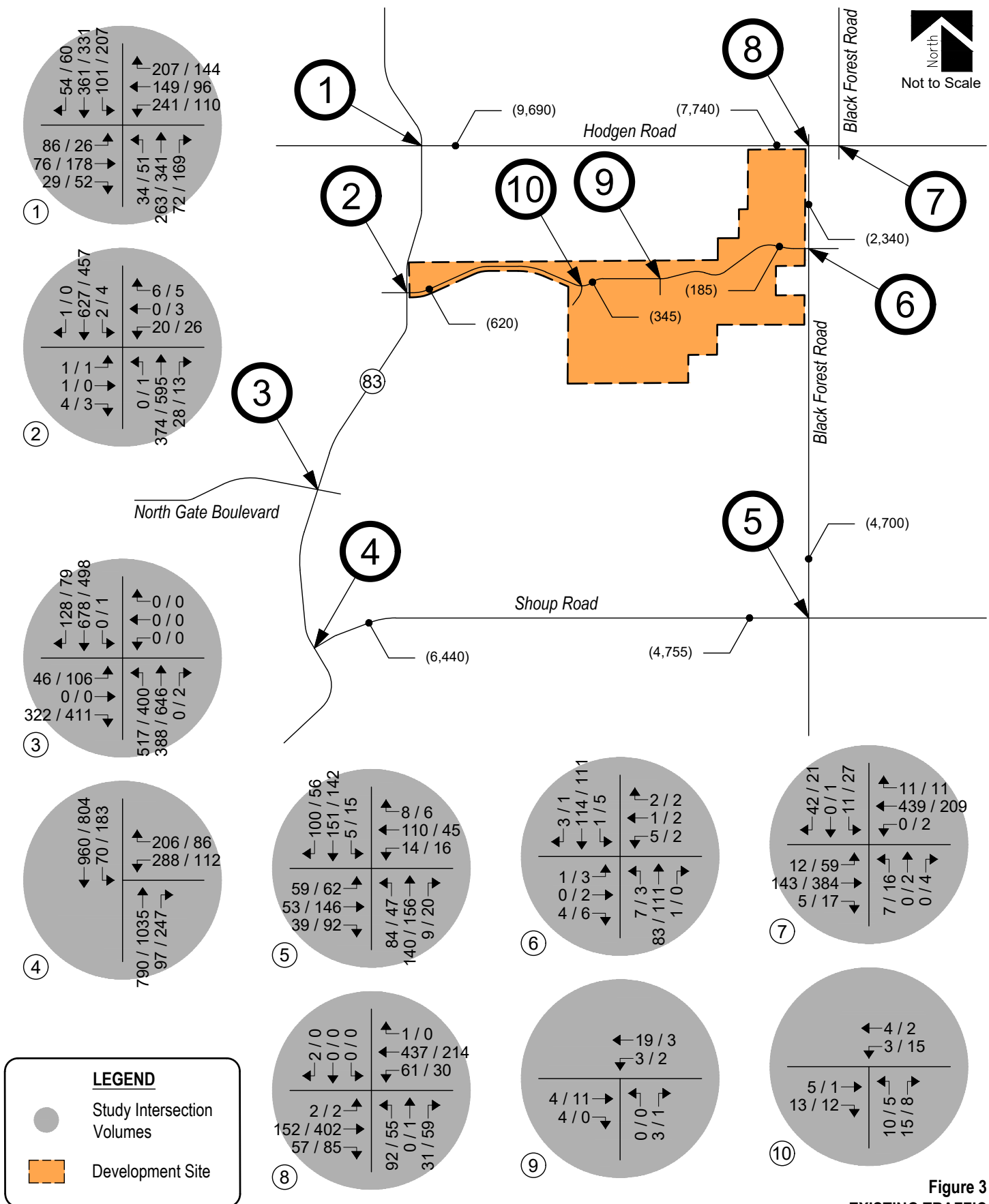


Figure 3
EXISTING TRAFFIC

Volumes

AM / PM Peak Hour

(ADT) : Average Daily Traffic



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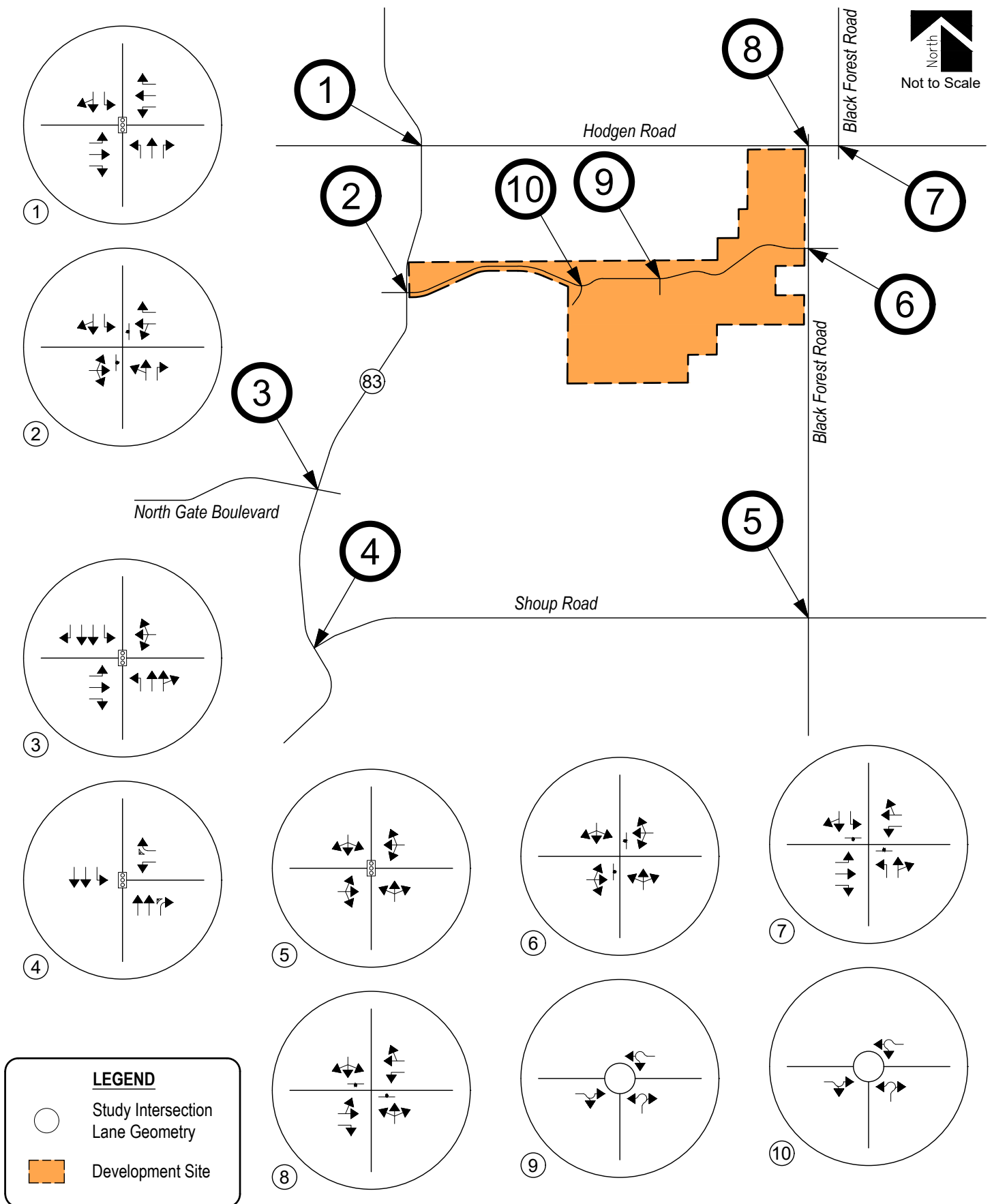


Figure 4
EXISTING TRAFFIC
 Intersection Geometry

Table 1 – Intersection Capacity Analysis Summary – Existing Traffic

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
State Highway 83 / Hodgen Road (Signalized)	C (23.1)	B (16.3)
State Highway 83 / North Gate Boulevard (Signalized)	B (13.9)	B (11.2)
State Highway 83 / Shoup Road (Signalized)	B (15.8)	B (11.8)
Black Forest Road / Shoup Road (Signalized)	B (15.9)	C (21.2)
State Highway 83 / Stagecoach Road (Stop-Controlled)		
Eastbound Left, Through and Right	C	C
Westbound Left and Through	D	D
Westbound Right	B	B
Northbound Left and Through	A	A
Southbound Left	A	A
Black Forest Road / Old Stagecoach Road (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	B
Northbound Left, Through and Right	A	A
Southbound Left, Through and Right	A	A
Hodgen Road / Black Forest Road / Ridge Run Drive (Stop-Controlled)		
Eastbound Left	A	A
Westbound Left	A	A
Northbound Left	C	C
Northbound Through and Right	A	B
Southbound Left	C	C
Southbound Through and Right	B	B
Hodgen Road / Black Forest Road (Stop-Controlled)		
Eastbound Left and Through	A	A
Westbound Left	A	A
Northbound Left, Through and Right	C	C
Southbound Left, Through and Right	B	A
Old Stagecoach Road / Allen Ranch Road (Roundabout)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A
Old Stagecoach Road / Shortwall Drive (Roundabout)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)

Stop-Controlled Intersection: Level of Service

Roundabout Intersection: Level of Service

Existing Traffic Analysis Results

Under existing conditions, operational analysis shows that the signalized intersection of State Highway 83 with Hodgen Road has overall operations at LOS C during the morning peak traffic hour and LOS B during the afternoon peak traffic hour.

The signalized intersection of State Highway 83 with North Gate Boulevard has overall operations at LOS B during both the morning and afternoon peak traffic hours.

The signalized intersection of State Highway 83 with Shoup Road has overall operations at LOS B during both the morning and afternoon peak traffic hours.

The signalized intersection of Black Forest Road with Shoup Road has overall operations at LOS B during the morning peak traffic hour and LOS C during the afternoon peak traffic hour.

The stop-controlled intersection of State Highway 83 with Stagecoach Road has turning movement operations at or better than LOS D during both the morning and afternoon peak traffic hours.

The stop-controlled intersection of Black Forest Road with Old Stagecoach Road has turning movement operations at LOS A during the morning peak traffic hour and LOS B or better during the afternoon peak traffic hour.

The stop-controlled intersection of Hodgen Road with Ridge Run Drive has turning movement operations at or better than LOS C during both the morning and afternoon peak traffic hours.

The stop-controlled intersection of Hodgen Road with Black Forrest Road has turning movement operations at or better than LOS C during both the morning and afternoon peak traffic hours.

The roundabout intersection of Old Stagecoach Road with Allen Ranch Road has turning movement operations at LOS A during both the morning and afternoon peak traffic hours.

The roundabout intersection of Old Stagecoach Road with Shortwall Drive has turning movement operations at LOS A during both the morning and afternoon peak traffic hours.

III. Future Traffic Conditions Without Proposed Development

Background traffic is the traffic projected to be on area roadways without consideration of the proposed development. Background traffic includes traffic generated by development of vacant parcels in the area.

To account for projected increases in background traffic for Years 2027 and 2042, a compounded annual growth rate was determined using population growth estimates provided by the PPACG's 2045 Long Range Transportation Plan, as well as traffic data provided by CDOT's OTIS for the adjacent segment of State Highway 83. PPACG's 2045 Long Range Transportation Plan anticipate a 20-year growth rate between one and two percent, while CDOT's OTIS anticipates a 20-year growth rate between two and three percent. Therefore, in order to provide for a conservative analysis, a growth rate of three percent was applied to existing traffic volumes. This annual growth rate is also considered to be consistent with long-term regional growth projections and the level of in-fill development expected within the area.

The County's Electronic Development Application Review Program (EDARP) provides traffic studies for future adjacent developments, providing additional trips that could impact the study area. However, these future development areas have traffic studies that are over three years old and no longer comply to the County's 2016 MTCP. These developments include but are not limited to: Mountain Dance, Shamrock Ranch, Paint Brush Hills, Setters View Subdivision, and Providence Point. As such, the conservative three percent annual growth mentioned above is expected to account for any future development within the overall study area.

Pursuant to the non-committed area roadway improvements discussed in Section I, Year 2027 background traffic conditions assume no roadway improvements to accommodate regional transportation demands. Year 2042 background traffic conditions assume the widening of State Highway 83 and the alignment of Black Forest Road across Hodgen Road. Year 2042 also assumes existing signal timing parameters for the signalized intersections within the study area with optimized intersection splits in effort to better long-term intersection performance. These assumptions provide for a conservative analysis.

Projected background traffic volumes and intersection geometry for Year 2027 are shown on Figure 5 and Figure 6, respectively.

Projected background traffic volumes and intersection geometry for Year 2042 are shown on Figure 7 and Figure 8, respectively.

Not consistent with statement on page 6
about maintaining existing timing so
progression is not disrupted.

Background Traffic Signal Warrants

A preliminary signal warrant analysis, using Year 2027 and 2042 background traffic volumes, was conducted for the State Highway 83 with Stagecoach Road intersection, as well as the Black Forest Road with Hodgen Road intersection, in order to review potential for traffic signal control. Warrant study worksheets are provided for reference in Appendix D.

From a traffic volume perspective, the State Highway 83 with Stagecoach Road intersection remained below the vehicle volume thresholds required to meet Warrant 1 (Eight-Hour Vehicular Volume), Warrant 2 (Four-Hour Vehicular Volume), and Warrant 3 (Peak Hour), from the MUTCD, for the installation of a traffic signal. As such, the intersection remained under stop-controlled conditions for Year 2027 and Year 2042.

Upon realignment of the Black Forest Road with Hodgen Road intersection assumed to occur by Year 2042, the study intersection was determined to be above the minimum vehicle volumes required to meet Warrants 1, 2, and 3 for the installation of a traffic signal. As such, the realigned intersection was analyzed under assumed traffic signal control by Year 2042.

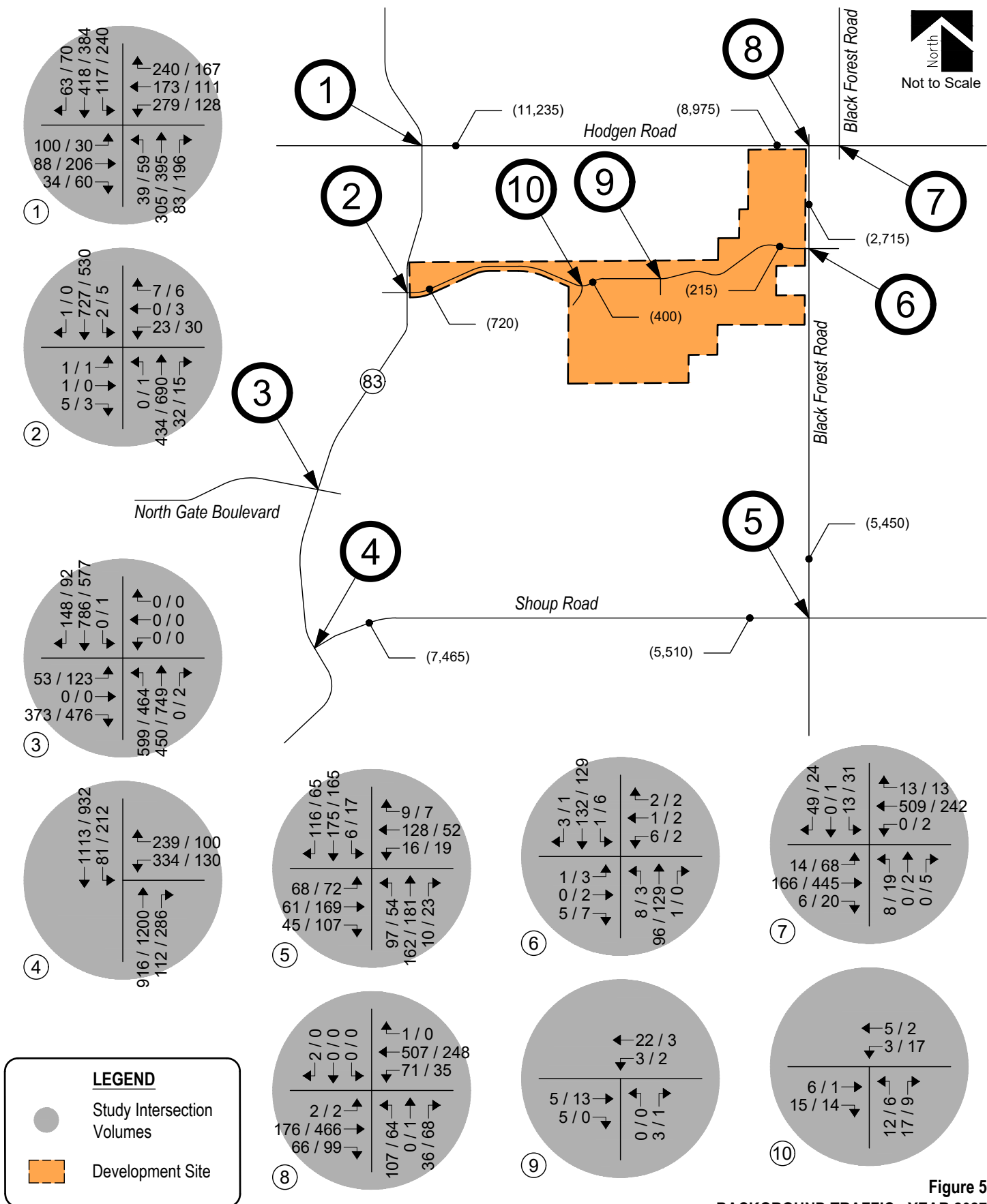
Said intersections should be monitored further by CDOT or County Staff as area development occurs to determine when or if traffic signal installation is appropriate.

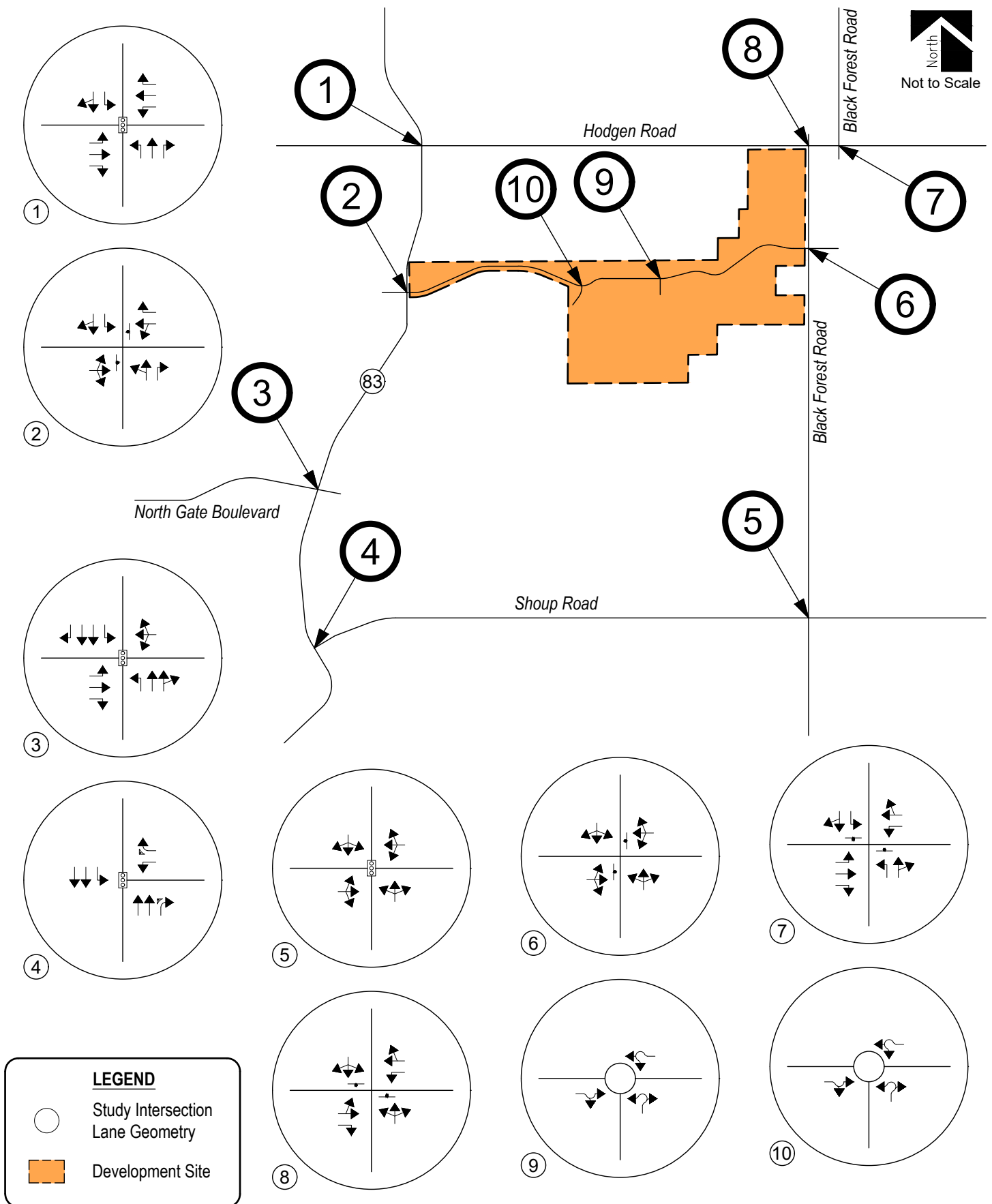
Peak Hour Intersection Levels of Service – Background Traffic

As with existing traffic conditions, the operations of study intersections were analyzed under background conditions, without the proposed development, using the SYNCHRO computer program.

Background traffic level of service analysis results for Year 2027 are listed in Table 2. Year 2042 operational results are summarized in Table 3.

Definitions of levels of service are given in Appendix B. Intersection capacity worksheets are provided in Appendix C.





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Figure 6
BACKGROUND TRAFFIC - YEAR 2027
Intersection Geometry

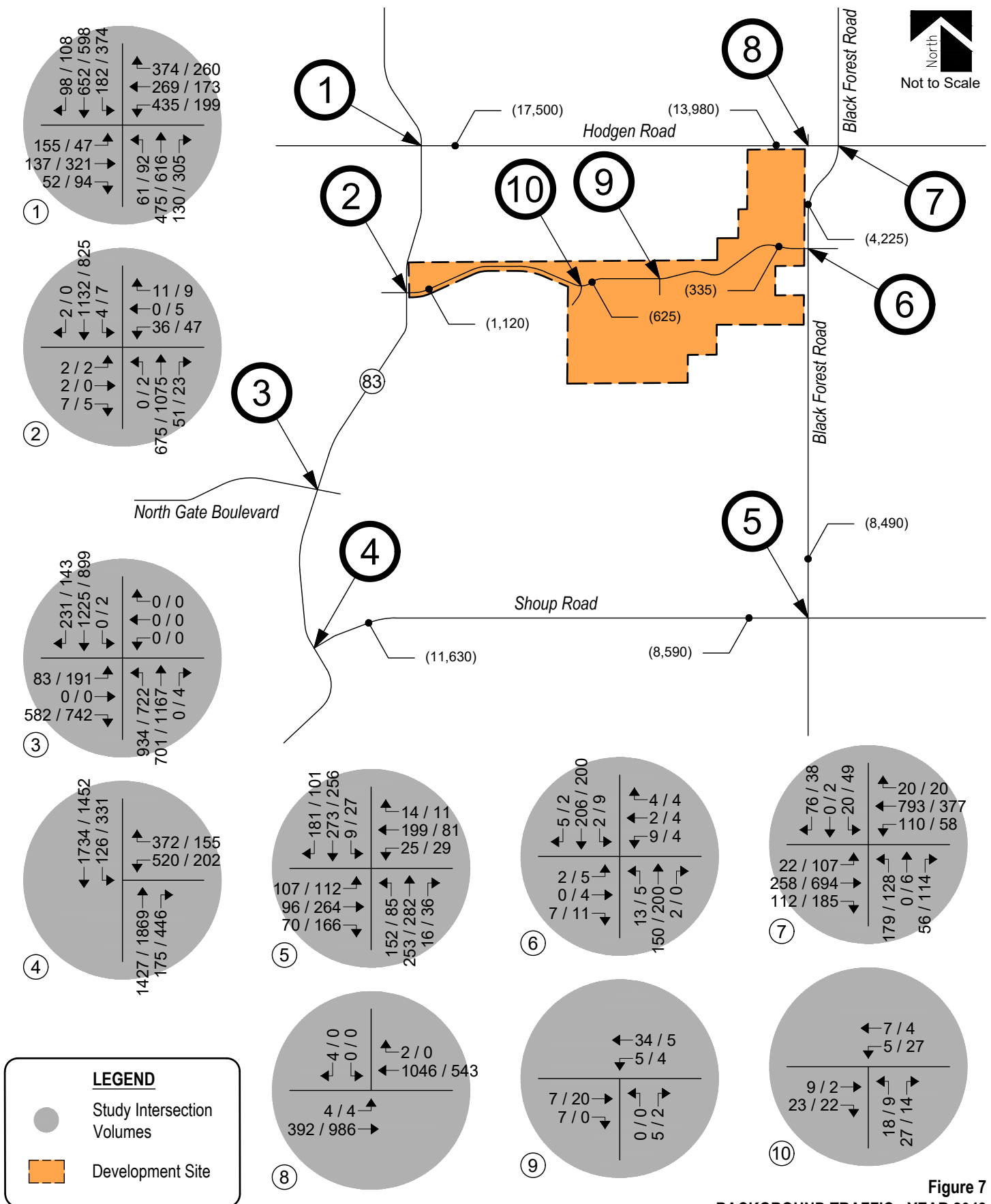


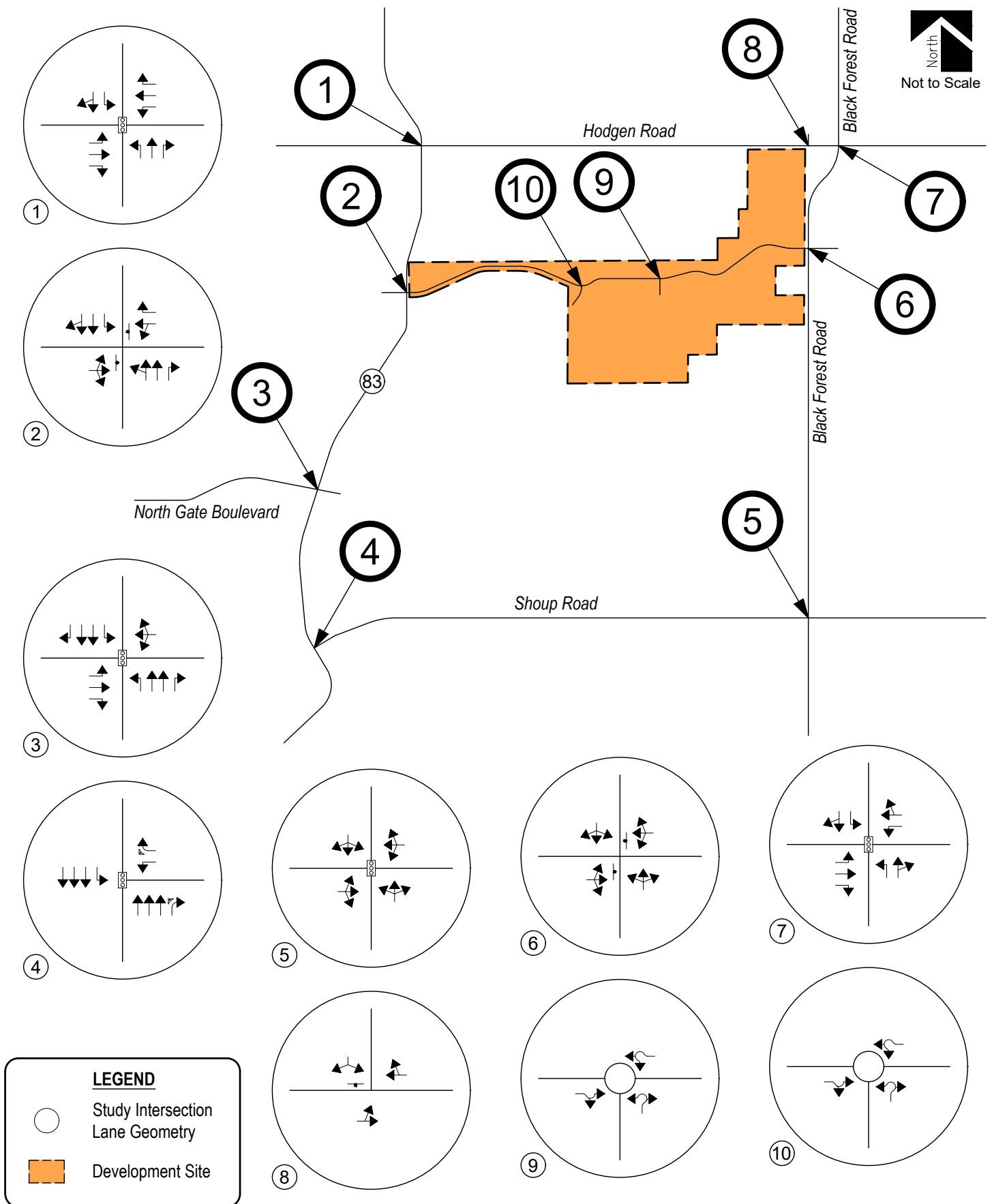
Figure 7
BACKGROUND TRAFFIC - YEAR 2042
 Volumes
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic



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Figure 8
BACKGROUND TRAFFIC - YEAR 2042
Intersection Geometry

Table 2 – Intersection Capacity Analysis Summary – Background Traffic – Year 2027

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
State Highway 83 / Hodgen Road (Signalized)	C (29.2)	B (17.9)
State Highway 83 / North Gate Boulevard (Signalized)	C (24.6)	B (14.1)
State Highway 83 / Shoup Road (Signalized)	B (17.7)	B (14.6)
Black Forest Road / Shoup Road (Signalized)	B (17.3)	C (23.3)
State Highway 83 / Stagecoach Road (Stop-Controlled)		
Eastbound Left, Through and Right	C	C
Westbound Left and Through	E	E
Westbound Right	B	B
Northbound Left and Through	A	A
Southbound Left	A	A
Black Forest Road / Old Stagecoach Road (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	B	B
Northbound Left, Through and Right	A	A
Southbound Left, Through and Right	A	A
Hodgen Road / Black Forest Road / Ridge Run Drive (Stop-Controlled)		
Eastbound Left	A	A
Westbound Left	A	A
Northbound Left	C	C
Northbound Through and Right	A	B
Southbound Left	C	C
Southbound Through and Right	B	B
Hodgen Road / Black Forest Road / Black Forrest Road (Stop-Controlled)		
Eastbound Left and Through	A	A
Westbound Left	A	A
Northbound Left, Through and Right	D	C
Southbound Left, Through and Right	B	A
Old Stagecoach Road / Allen Ranch Road (Roundabout)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A
Old Stagecoach Road / Shortwall Drive (Roundabout)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)
 Stop-Controlled Intersection: Level of Service
 Roundabout Intersection: Level of Service

Background Traffic Analysis Results – Year 2027

Year 2027 background traffic analysis indicates that all signalized intersections within the study area experience overall operations at or better than LOS C during both the morning and afternoon peak traffic hours.

All stop-controlled intersections within the study area have turning movement operations at or better than LOS D during the morning peak traffic hour and LOS C or better during the afternoon peak traffic hour. Exceptions would include the westbound left and through turning movement at State Highway 83 and Stagecoach Road, which operates at LOS E during either peak traffic hour. The LOS E operations are attributed to the through traffic volume along State Highway 83 and the stop-controlled nature of the intersection.

The roundabout intersections along Old Stagecoach Road are shown to have turning movement operations at LOS A during both the morning and afternoon peak traffic hours.

It is to be noted that it is not uncommon for unsignalized movements to or from an arterial roadway, in urban areas, to operate with noticeable delays during peak traffic hours. It is, however, likely that turn movements will operate better than the results obtained with this HCM Two Way Stop Control (TWSC) level of service analysis would indicate, as the HCM analysis may not accurately account for the effect of vehicle platooning and gaps caused by upstream signals. Upstream signal controls along State Highway 83 may create additional gaps in the traffic stream for turning movements at Stagecoach Road which could provide mitigation to the LOS E operations projected during both peak traffic hours.

Was progression re-evaluated
to verify this statement?

Table 3 – Intersection Capacity Analysis Summary – Background Traffic – Year 2042

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
State Highway 83 / Hodgen Road (Signalized)	D (45.9)	D (53.5)
State Highway 83 / North Gate Boulevard (Signalized)	F (82.9)	D (50.3)
State Highway 83 / Shoup Road (Signalized)	C (25.7)	C (20.3)
Black Forest Road / Shoup Road (Signalized)	C (24.3)	C (27.8)
Hodgen Road / Black Forest Road (Signalized)	C (20.6)	B (16.1)
State Highway 83 / Stagecoach Road (Stop-Controlled)		
Eastbound Left, Through and Right	D	C
Westbound Left and Through	F	F
Westbound Right	B	B
Northbound Left and Through	A	A
Southbound Left	A	B
Black Forest Road / Old Stagecoach Road (Stop-Controlled)		
Eastbound Left, Through and Right	B	B
Westbound Left, Through and Right	B	B
Northbound Left, Through and Right	A	A
Southbound Left, Through and Right	A	A
Hodgen Road / Black Forrest Road (Stop-Controlled)		
Eastbound Left and Through	A	A
Southbound Left and Right	C	A
Old Stagecoach Road / Allen Ranch Road (Roundabout)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A
Old Stagecoach Road / Shortwall Drive (Roundabout)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)

Stop-Controlled Intersection: Level of Service

Roundabout Intersection: Level of Service

Background Traffic Analysis Results – Year 2042

By Year 2042 and without the proposed development, all signalized intersections within the study area are expected to have overall operations at or better than LOS D during both the morning and afternoon peak traffic hours. The exception includes the State Highway 83 and North Gate Boulevard intersection which shows overall LOS F operations during the morning peak traffic hour. The LOS F operation is attributed to the northbound left turning volumes and conflicting southbound through volumes. A possible mitigation to the anticipated LOS F operation could be the implementation of dual northbound left turn lanes that could allow for an overall LOS D operation.

All stop-controlled intersections within the study area project turning movement operations at or better than LOS D during both peak traffic hours. Exceptions still include the westbound left and through turning movement at State Highway 83 and Stagecoach Road, which operates at LOS F during either peak traffic hour. The LOS F operations are attributed to the through traffic volume along State Highway 83 and the stop-controlled nature of the intersection.

Although the study intersection of State Highway 83 and Stagecoach Road is not projected to meet MUTCD's vehicle volumes requirements for consideration of traffic signal control, signalization at the intersection could provide relief to the levels of service indicated under stop-control conditions.

It is emphasized that it is not uncommon for unsignalized movements to or from an arterial roadway, in urbanized areas, to operate with noticeable delays during peak traffic hours. It is, however, likely that turn movements will operate better than the results obtained with this HCM Two Way Stop Control (TWSC) level of service analysis would indicate, as HCM analysis limitations may not accurately account for the effect of vehicle platooning and gaps caused by upstream signals. Upstream signal controls along State Highway 83 may create additional gaps in the traffic stream for turning movements at Stagecoach Road which could provide mitigation to the LOS F operations projected during both peak traffic hours.

Both roundabout intersections along Old Stagecoach Road are shown to have projected turning movement operations at LOS A during both the morning and afternoon peak traffic hours.

Was progression
re-evaluated to verify
this statement?

IV. Proposed Project Traffic

Trip Generation

Standard traffic generation characteristics compiled by the Institute of Transportation Engineers (ITE) in their report entitled Trip Generation Manual, 11th Edition, were applied to the proposed land use in order to estimate average daily traffic (ADT), AM Peak Hour, and PM Peak Hour vehicle trips. A vehicle trip is defined as a one-way vehicle movement from a point of origin to a point of destination.

The ITE land use codes 210 (Single-Family Detached Housing) applied to estate lots and low density residential acreages, 215 (Single-Family Attached Housing) applied to medium density acreage, 330 (Resort Hotel) applied to hotel rooms / golf casitas and branded flats acreages, 492 (Health/Fitness Club) applied to fitness center acreage, and 821 (Shopping Plaza (40-150k)) applied to commercial acreage were used for estimating trip generation because of their best fit to the proposed land use descriptions.

It is important to note that ITE land use codes 330 (Resort Hotel) and 492 (Health/Fitness Club) do not provide a 24-hour trip generation rate. Therefore, in order to estimate 24-hour trip generation volumes from said land uses, Resort Hotel used 24-hour trip generation rates from ITE land use code 310 (Hotel), and Health/Fitness Club derived 24-hour trip generation volumes using standard relationships of ADT volumes versus peak hour volumes.

Additionally, as described by ITE's Trip Generation Manual, resort hotels cater to the tourist and vacation industry, often providing recreational facilities such as golf courses. Therefore, site-generated trips resulting from the golf course land use are already included within ITE land use code 330 (Resort Hotel). As such, considering how the golf course is already existing, the addition of site-generated trips shown below in Table 5 is understood to provide for a conservative analysis.

Due to the conceptual nature of the proposed development, no specific commercial land uses have been determined. As such, a floor-area-ratio (FAR) of 0.25, referenced from Section 5.3.2, Table 5-4 of the County's Land Development Code⁶, was applied to the commercial areas of the Flying Horse North sketch plan.

As actual land uses, densities or site plans within the Flying Horse North sketch plan become defined over time and through additional County land use approval procedures, it is expected that traffic generation characteristics considered within this study will need to be updated by more specific traffic analyses or studies to help assess if transportation improvements are needed to mitigate potential traffic impacts.

Trip generation rates used in this study are presented in Table 4.

⁶ Land Development Code of El Paso County, Colorado, El Paso County Development, December 2021.

Table 4 – Trip Generation Rates

ITE CODE	LAND USE	UNIT	TRIP GENERATION RATES						
			24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
210	Single-Family Detached Housing	DU	9.43	0.18	0.52	0.70	0.59	0.35	0.94
215	Single-Family Attached Housing	DU	7.20	0.15	0.33	0.48	0.32	0.25	0.57
330	Resort Hotel	RMS	7.99 [†]	0.23	0.09	0.32	0.18	0.23	0.41
492	Health/Fitness Club	KSF	*	0.67	0.64	1.31	1.97	1.48	3.45
821	Shopping Plaza (40-150k)	KSF	67.52	1.07	0.66	1.73	2.54	2.65	5.19

Key: DU = Dwelling Units. KSF = Thousand Square Feet Gross Floor Area. RMS = Rooms.

[†] = 24-hour trip generation rate from ITE land use code 310 (Hotel).

Note: All data and calculations above are subject to being rounded to nearest value.

Table 5 illustrates projected ADT, AM Peak Hour, and PM Peak Hour traffic volumes likely generated by the proposed development upon build-out.

Table 5 – Trip Generation Summary

ITE CODE	LAND USE	SIZE	DU	TOTAL TRIPS GENERATED						
				24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
					ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
210	Single-Family Detached Housing	709	DU	6,686	129	367	496	420	247	666
215	Single-Family Attached Housing	138	DU	994	21	46	66	45	34	79
330	Resort Hotel	275	RMS	2,197	63	25	88	48	64	113
492	Health/Fitness Club	44.6	KSF	1,540	30	29	58	88	66	154
821	Shopping Plaza (40-150k)	99.1	KSF	6,691	106	65	171	252	262	514
Total:				18,108	349	531	880	853	673	1,526

Note: All data and calculations above are subject to being rounded to nearest value.

Upon build-out and without consideration of applicable vehicle trip reductions, Table 5 illustrates that the proposed development has the potential to generate approximately 18,108 daily trips with 880 of those occurring during the morning peak hour and 1,526 during the afternoon peak hour.

Adjustments to Trip Generation Rates

It is considered likely that a mixed-use development of this type will attract trips from within area land uses. However, due to the sketch plan's conceptual nature, an exact vehicle trip reduction cannot be determined at this time but could be as little as 10 percent. As such, an assumed 10 percent internal capture reduction was applied to trip generation estimates.

It appears that a simple 10% reduction was taken. However, attractions must equal productions. Show calculations to demonstrate that internal capture was calculated appropriately.

Table 6 illustrates projected ADT, AM Peak Hour, and PM Peak Hour traffic volumes likely generated by the proposed development upon build-out with reduction applied due to assumed internal capture.

Table 6 – Trip Generation Summary with Reductions

ITE CODE	LAND USE	SIZE	24 HOUR	TOTAL TRIPS GENERATED					
				AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
210	Single-Family Detached Housing	709 DU	6,017	116	331	447	378	222	600
215	Single-Family Attached Housing	138 DU	894	18	41	60	40	30	71
330	Resort Hotel	275 RMS	1,978	57	22	79	44	58	101
492	Health/Fitness Club	44.6 KSF	1,386	27	26	53	79	60	139
821	Shopping Plaza (40-150k)	99.1 KSF	6,022	96	59	154	227	236	463
<i>Trip Reduction:</i>			10%	10%	10%	10%	10%	10%	10%
<i>Total:</i>			16,297	314	478	792	768	606	1,374

Note: All data and calculations above are subject to being rounded to nearest value.

Upon build-out and with consideration for internal capture trip reduction, Table 6 illustrates that the proposed development has the potential to generate approximately 16,297 daily trips with 792 of those occurring during the morning peak hour and 1,374 during the afternoon peak hour.

Trip Distribution

The overall directional distribution of site-generated traffic was determined based on the location of development site within the County, proposed and existing area land uses, allowed turning movements, available roadway network, and in reference to historical traffic count data provided by CDOT's TCDS.

Overall trip distribution patterns for the development are shown on Figure 9.

Trip Assignment

Traffic assignment is how generated and distributed vehicle trips are expected to be loaded onto the available roadway network.

Applying trip distribution patterns to site-generated traffic provides the overall site-generated trip assignments shown on Figure 9.

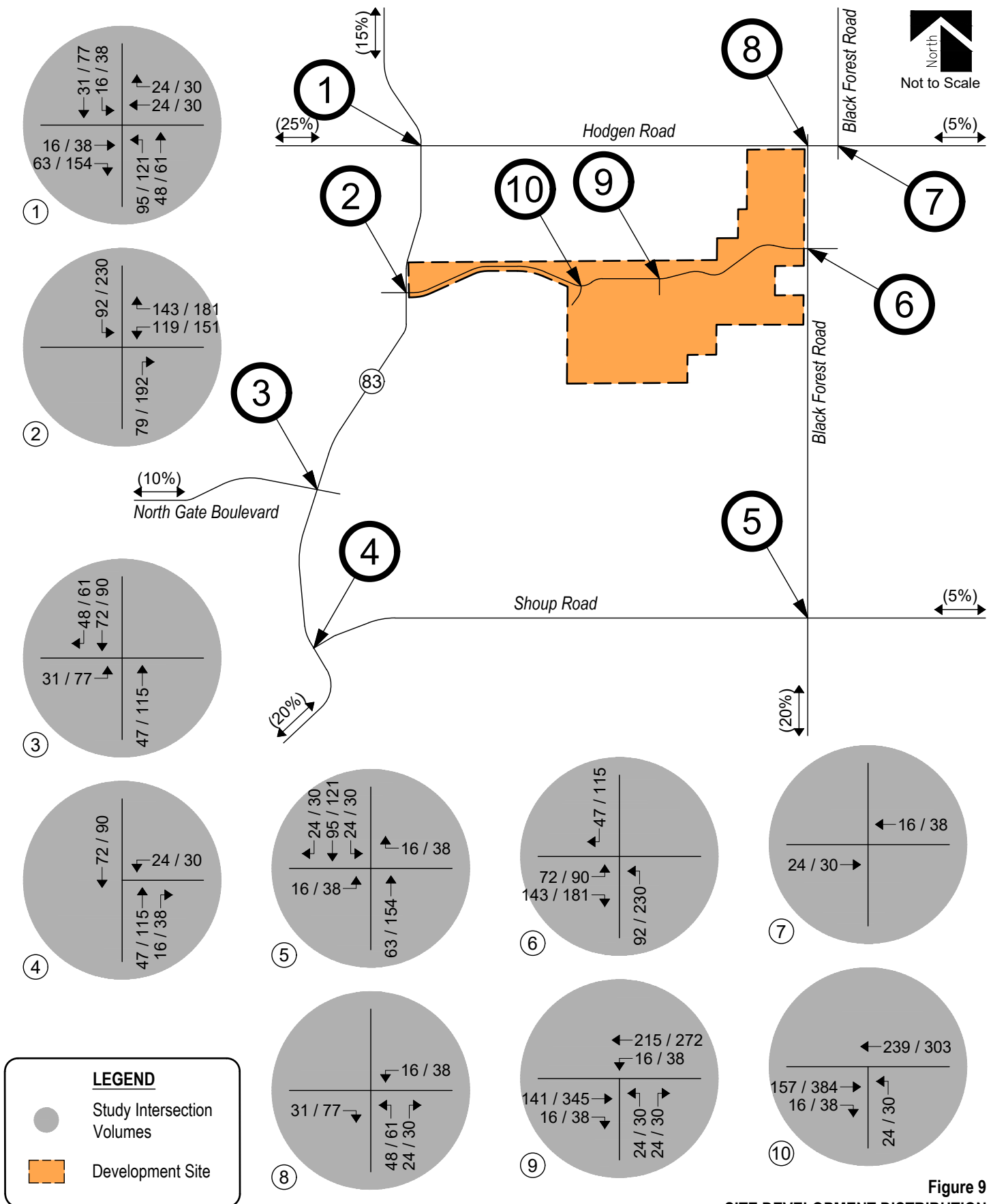


Figure 9
SITE DEVELOPMENT DISTRIBUTION
 (%) : Overall
SITE-GENERATED
 AM / PM Peak Hour

V. Future Traffic Conditions With Proposed Developments

Total traffic is the traffic projected to be on area roadways with consideration of the proposed development. Total traffic includes background traffic projections for Years 2027 and 2042 with consideration of site-generated traffic. For analysis purposes, it was assumed that overall development construction would be completed by end of Year 2027.

Pursuant to area roadway improvement discussions provided in Section III, Year 2027 and Year 2042 total traffic conditions assume no additional roadway improvements to accommodate regional transportation demands than that described for each background analysis year. Roadway improvements associated with site development are expected to be limited to site access and frontage as required by the governing agency.

Projected Year 2027 total traffic volumes and intersection geometry are shown in Figure 10 and Figure 11, respectively.

Figure 12 and Figure 13 shows projected total traffic volumes and intersection geometry for Year 2042, respectively.

Total Traffic Signal Warrants

A preliminary signal warrant analysis, using total traffic volumes, was conducted for the State Highway 83 with Stagecoach Road intersection, as well as the Black Forest Road with Old Stagecoach Road intersection, to review the potential for traffic signal control. Year 2027 analysis results conclude that both intersections exceed minimum vehicle volume thresholds to meet MUTCD's Warrant 1 – Eight-Hour Vehicular Volume, Warrant 2 – Four-Hour Vehicular Volume, and Warrant 3 – Peak Hour for the installation of a traffic signal.

The study intersections should be monitored further by CDOT or County Staff as actual area development occurs to determine when or if signalization installation is appropriate.

Warrant study worksheets are provided for reference in Appendix D.

Total Traffic Auxiliary Lane Analysis

Auxiliary lanes for site development accesses were based on the County's ECM and CDOT's State Highway Access Code (SHAC)⁷.

⁷ State Highway Access Code, The Transportation Commission of Colorado, March 2002.

Considering development build-out, an evaluation of auxiliary lane requirements, pursuant to Section 2.3.7 of the County's ECM, reveals that a southbound right turn deceleration lane along Black Forest Road at Old Stagecoach Road is required since the southbound right turn ingress volume exceeds the 25 vehicles per hour threshold. Section 2.3.7 of the County's ECM also reveals that an exclusive northbound left turn deceleration lane is required along Black Forest Road at Old Stagecoach Road since the northbound left turn ingress volume exceeds the County's threshold of 10 vehicles per hour.

An evaluation of auxiliary lane requirements, pursuant to Sections 3.8(5) and 4.8(2) of CDOT's SHAC, reveals that the existing northbound right and southbound left turn lanes along State Highway 83 may need to be lengthened to accommodate projects vehicle volumes in the long-term future.

Due to the conservative analysis performed throughout this study and the conceptual nature of the Flying Horse North sketch plan, it is expected that auxiliary lane requirements evaluated within this study will need to be updated by more specific traffic analyses or studies as actual area development occurs, to help assess if transportation improvements are needed to meet the County's and CDOT's vehicle volume thresholds.

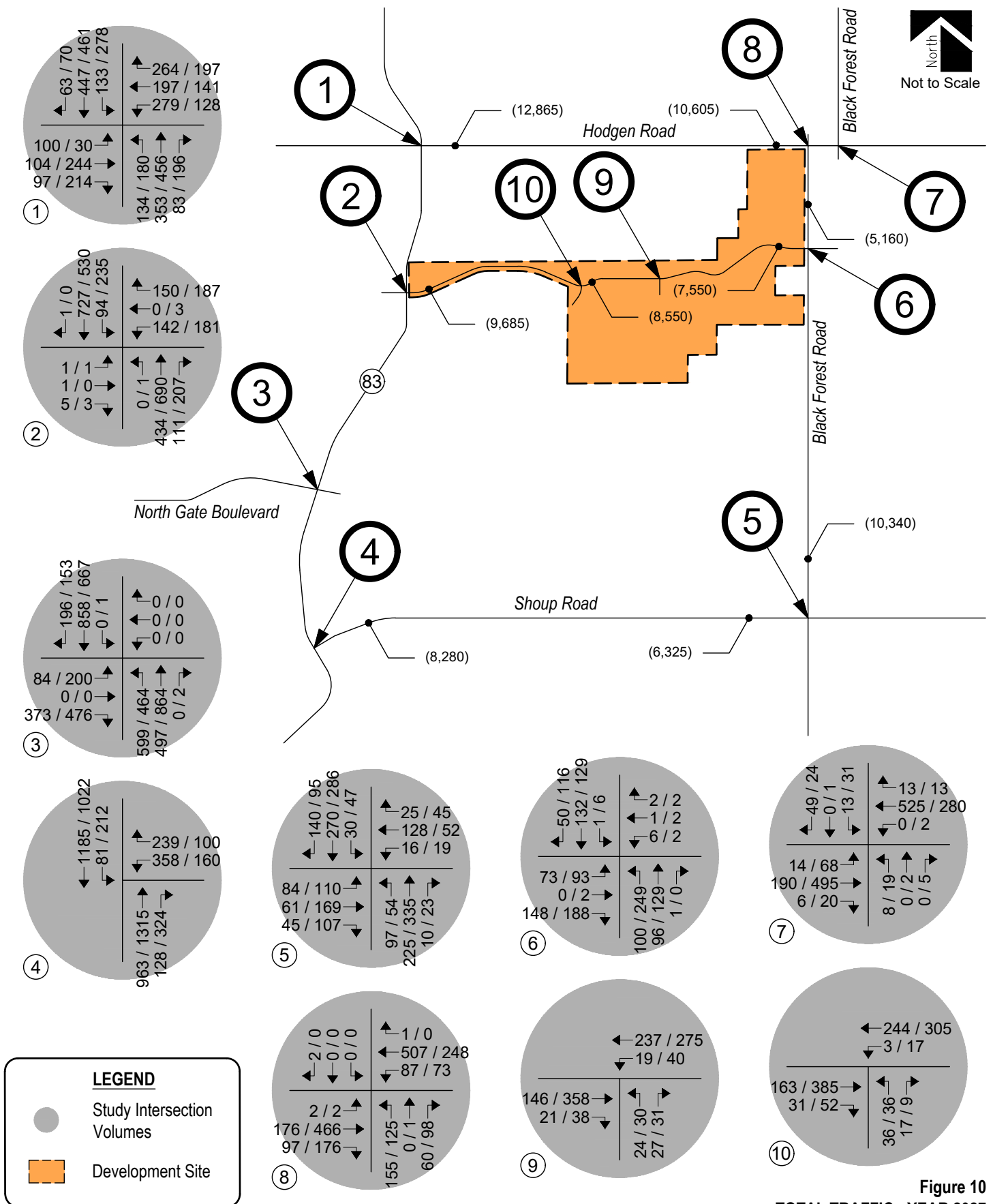


Figure 10
TOTAL TRAFFIC - YEAR 2027
 Volumes
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic

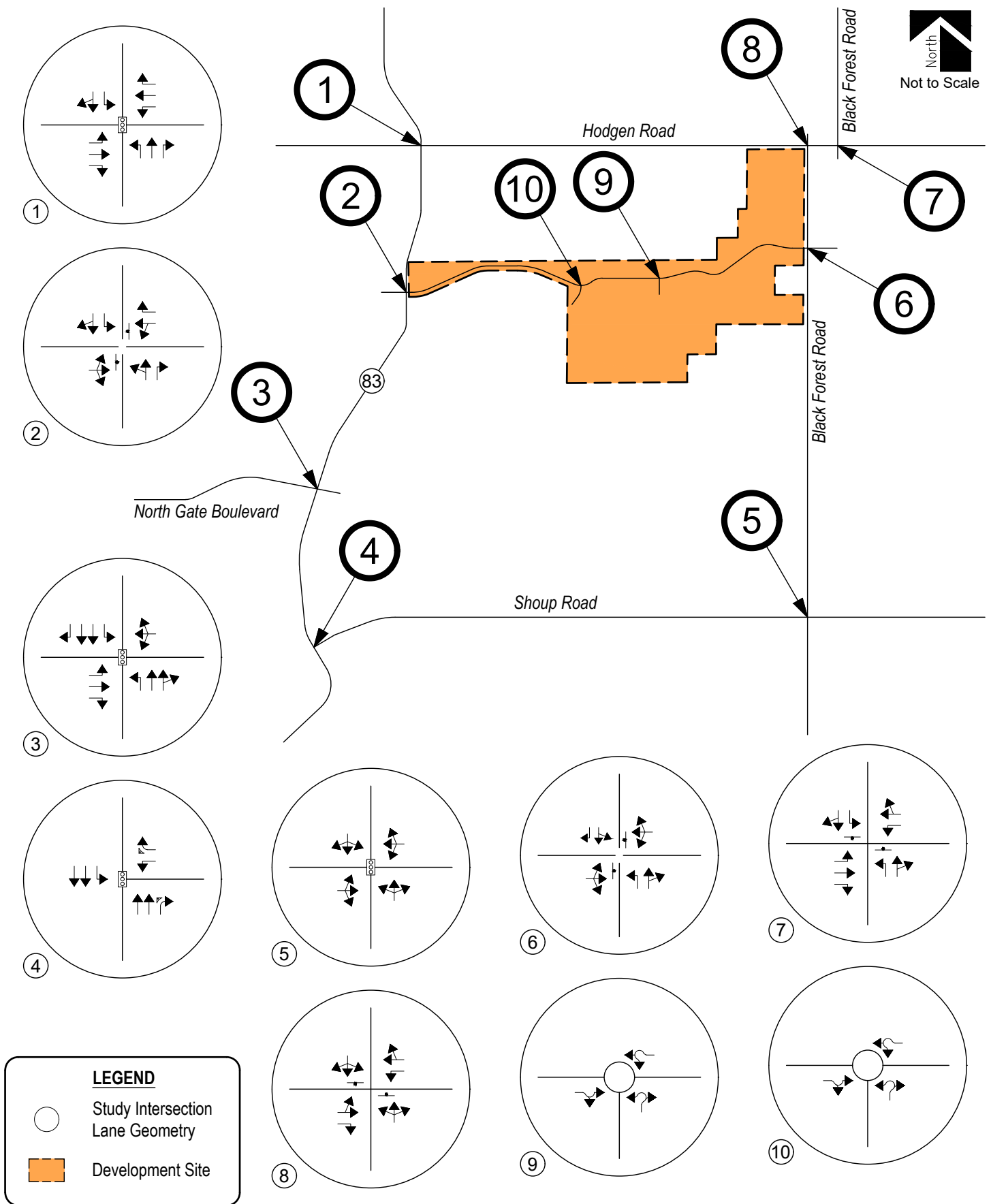


Figure 11
TOTAL TRAFFIC - YEAR 2027
 Intersection Geometry

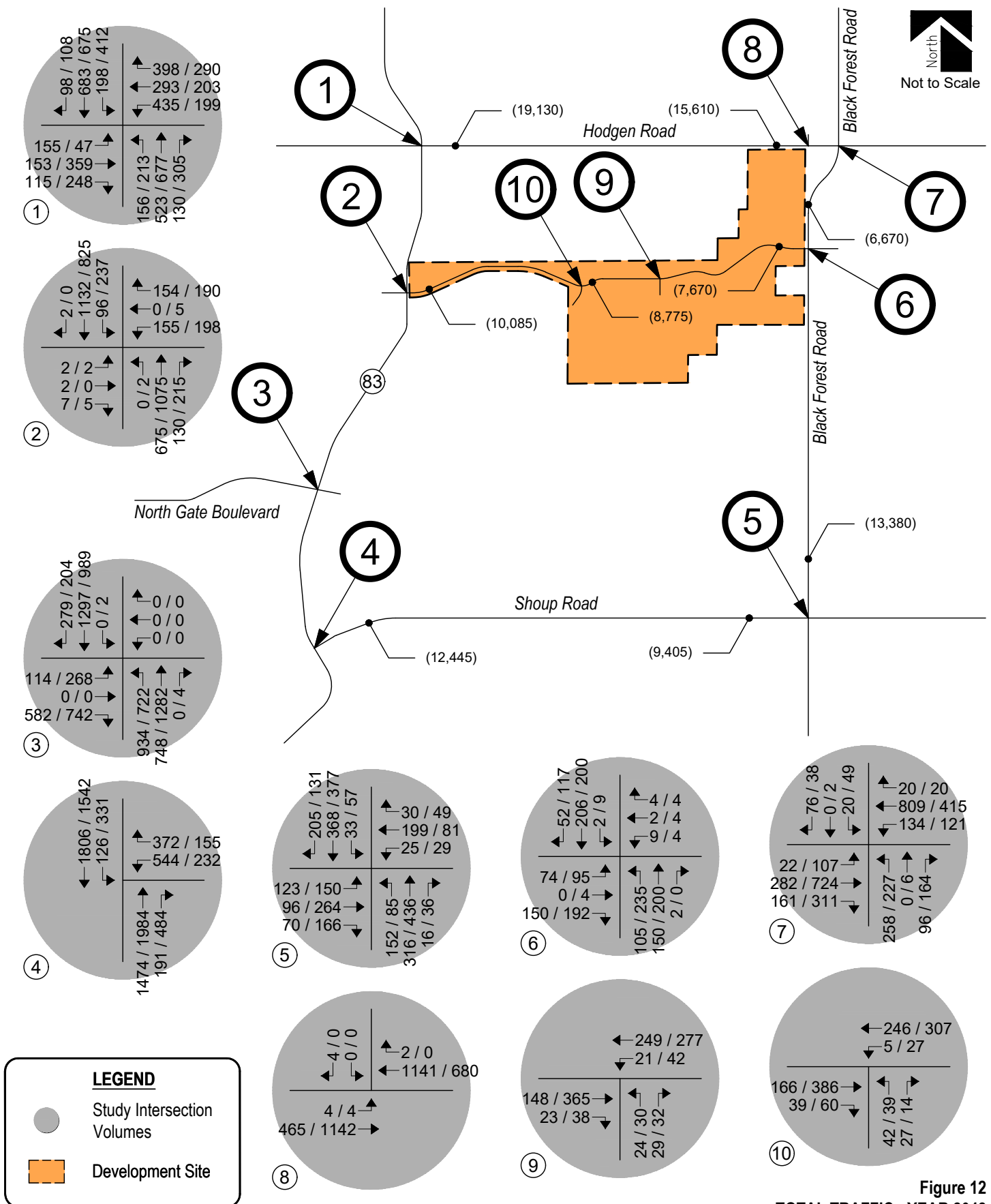


Figure 12
TOTAL TRAFFIC - YEAR 2042
 Volumes
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic

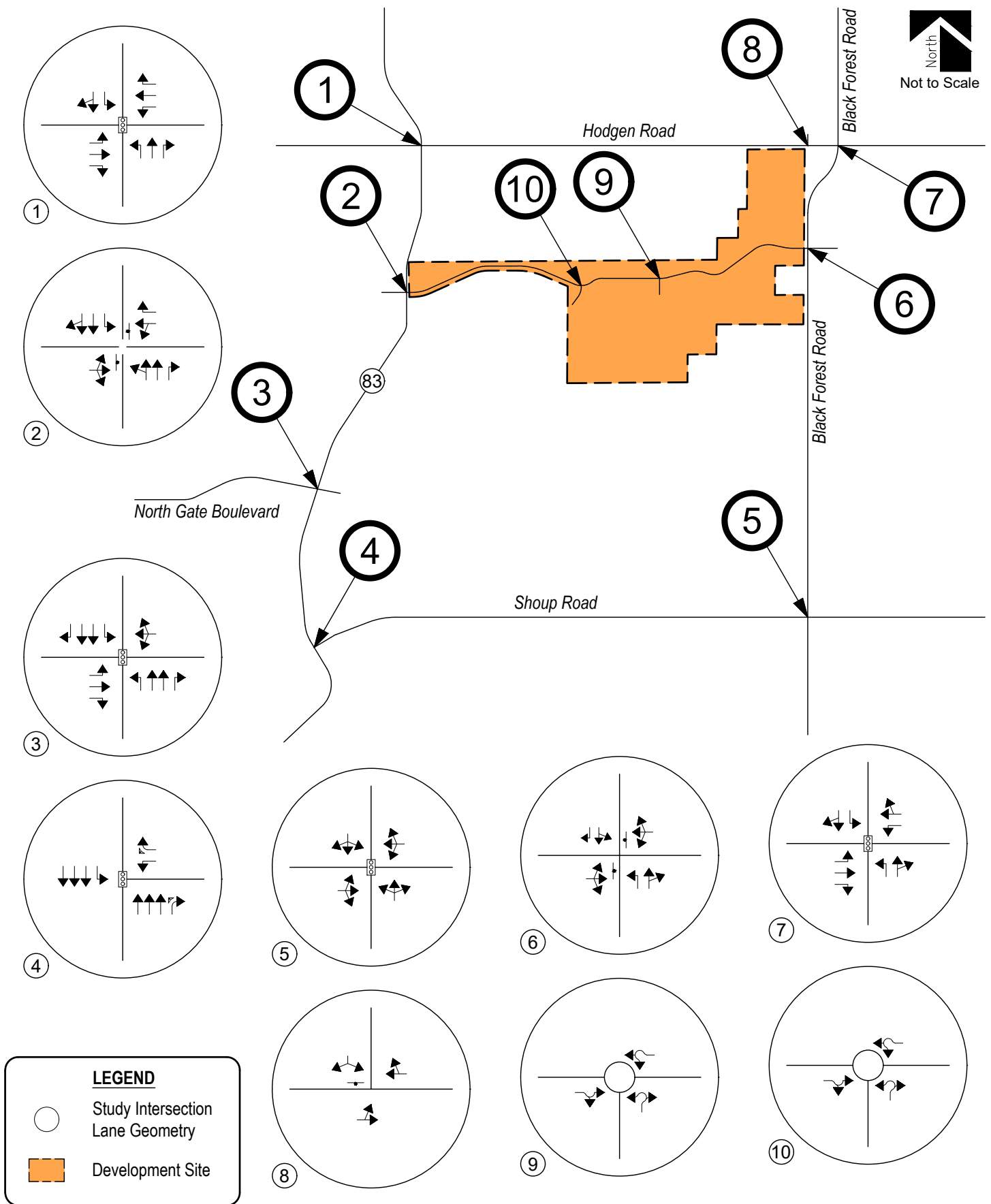


Figure 13
TOTAL TRAFFIC - YEAR 2042
 Intersection Geometry

VI. Project Impacts

The analyses and procedures described in this study were performed in accordance with the Highway Capacity Manual (HCM) and are based upon the worst-case conditions that occur during a typical weekday upon build-out of site development and analyzed land uses. Therefore, study intersections are likely to operate with traffic conditions better than those described within this study, which represent the peak hours of weekday operations only.

Peak Hour Intersection Levels of Service – Total Traffic

As with background traffic, the operations of the study intersections were analyzed under projected total traffic conditions using the SYNCHRO computer program. Total traffic level of service analysis results for Years 2027 and 2042 are summarized in Table 7 and Table 8, respectively.

Definitions of levels of service are given in Appendix B. Intersection capacity worksheets are provided in Appendix C.

Table 7 – Intersection Capacity Analysis Summary – Total Traffic – Year 2027

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
State Highway 83 / Hodgen Road (Signalized)	C (28.2)	B (19.8)
State Highway 83 / North Gate Boulevard (Signalized)	C (31.7)	B (18.1)
State Highway 83 / Shoup Road (Signalized)	B (18.9)	B (17.4)
Black Forest Road / Shoup Road (Signalized)	B (17.6)	C (24.2)
State Highway 83 / Stagecoach Road (Stop-Controlled) Eastbound Left, Through and Right Westbound Left and Through Westbound Right Northbound Left and Through Southbound Left	D F B A A	F F C A B
State Highway 83 / Stagecoach Road (Signalized)	B (15.3)	C (24.5)
Black Forest Road / Old Stagecoach Road (Stop-Controlled) Eastbound Left, Through and Right Westbound Left, Through and Right Northbound Left Southbound Left and Through	B B A A	D C A A
Black Forest Road / Old Stagecoach Road (Signalized)	B (10.8)	B (12.1)
Hodgen Road / Black Forest Road / Ridge Run Drive (Stop-Controlled) Eastbound Left Westbound Left Northbound Left Northbound Through and Right Southbound Left Southbound Through and Right	A A C A C B	A A D B D B
Hodgen Road / Black Forest Road / Black Forrest Road (Stop-Controlled) Eastbound Left and Through Westbound Left Northbound Left, Through and Right Southbound Left, Through and Right	A A F B	A A E A
Old Stagecoach Road / Allen Ranch Road (Roundabout) Eastbound Through and Right Westbound Left and Through Northbound Left and Right	A A A	A A A
Old Stagecoach Road / Shortwall Drive (Roundabout) Eastbound Through and Right Westbound Left and Through Northbound Left and Right	A A A	A A A

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)
 Stop-Controlled Intersection: Level of Service
 Roundabout Intersection: Level of Service

Table 8 – Intersection Capacity Analysis Summary – Total Traffic – Year 2042

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
State Highway 83 / Hodgen Road (Signalized)	E (59.6)	F (83.6)
State Highway 83 / North Gate Boulevard (Signalized)	F (92.0)	E (61.2)
State Highway 83 / Shoup Road (Signalized)	C (27.0)	C (22.5)
Black Forest Road / Shoup Road (Signalized)	C (29.0)	D (44.9)
Hodgen Road / Black Forest Road (Signalized)	C (24.9)	C (20.4)
State Highway 83 / Stagecoach Road (Stop-Controlled)		
Eastbound Left, Through and Right	F	F
Westbound Left and Through	F	F
Westbound Right	B	C
Northbound Left and Through	A	A
Southbound Left	B	C
State Highway 83 / Stagecoach Road (Signalized)	B (13.3)	C (24.0)
Black Forest Road / Old Stagecoach Road (Stop-Controlled)		
Eastbound Left, Through and Right	C	E
Westbound Left, Through and Right	C	D
Northbound Left	A	A
Southbound Left and Through	A	A
Black Forest Road / Old Stagecoach Road (Signalized)	B (10.8)	B (12.8)
Hodgen Road / Black Forrest Road (Stop-Controlled)		
Eastbound Left and Through	A	A
Southbound Left and Right	C	A
Old Stagecoach Road / Allen Ranch Road (Roundabout)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A
Old Stagecoach Road / Shortwall Drive (Roundabout)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)
 Stop-Controlled Intersection: Level of Service
 Roundabout Intersection: Level of Service

General for this section - 2042 improvements rely on signal timing optimization, but text on page 12 says that future signal timings have not been optimized. Clarify.

Total Traffic Analysis Results Upon Development Build-Out

Table 8 illustrates how, by Year 2042 and upon assumed development build-out, the signalized intersection of State Highway 83 with Hodgen Road experiences overall operations at LOS E during the morning peak traffic hour and LOS F during the afternoon peak traffic hour. The poorer levels of service are attributed to westbound, northbound, and southbound turn movements. Possible mitigation the anticipated LOS E and LOS F operations could be the consideration of alternate signal timing, additional turn lanes, and an additional southbound through lane which, additionally, could reduce overall intersection delay and better accommodate vehicle queue lengths.

The signalized intersection of State Highway 83 with North Gate Boulevard anticipates overall operations at LOS F during the morning peak traffic hour and LOS E during the afternoon peak traffic hour. The LOS E and F operations are attributed to the northbound left turning volumes and conflicting southbound through volumes. To mitigate the anticipated level of service operations, implementing dual northbound left turn lanes and optimized signal timing could provide for overall LOS D operations.

The signalized intersection of State Highway 83 with Shoup Road projects overall operations at LOS C during both the morning and afternoon peak traffic hours.

The signalized intersection of Black Forest Road with Shoup Road has projected overall operations at LOS C during the morning peak traffic hour and LOS D during the afternoon peak traffic hour.

The signalized intersection of Hodgen Road with Black Forest Road anticipates overall operations at LOS C during both the morning and afternoon peak traffic hours.

Specific movement or entire approach?

The stop-controlled intersection of State Highway 83 with Stagecoach Road is projected to have turning movement operations at or better than LOS B during the morning peak traffic hour and LOS C or better during the afternoon peak traffic hour. Exceptions would include the eastbound turning movement and the westbound left and through shared movement, which operate at LOS F during either peak traffic hour. The LOS F operations are attributed to the through traffic volume along State Highway 83 and the stop-controlled nature of the intersection. Traffic signal control of the intersection, as analyzed in Section V and shown in Table 8, has the potential to provide acceptable overall intersection operations.

Specific movement or entire approach?

The stop-controlled intersection of Black Forest Road with Old Stagecoach Road is projected to have turning movement operations at or better than LOS D during both the morning and afternoon peak traffic hours. Exceptions include the eastbound turning movement which expects LOS E operations during the afternoon peak traffic hour. The LOS E operation is attributed to the northbound and southbound through volumes along Black Forest Road and the stop-controlled nature of the intersection. Traffic signal control of the intersection, as analyzed in Section V and shown in Table 8, has the potential to provide acceptable overall intersection operations.

The stop-controlled intersection of Hodgen Road with Black Forrest Road shows turning movement operations at or better than LOS C during both the morning and afternoon peak traffic hours.

It is again emphasized that it is not uncommon for unsignalized movements to or from an arterial roadway, in urbanized areas, to operate with noticeable delays during peak traffic hours. It is, however, likely that turn movements will operate better than the results obtained with this HCM Two Way Stop Control (TWSC) level of service analysis would indicate, as the HCM analysis limitations may not accurately account for the effect of vehicle platooning and gaps caused by upstream signals. Upstream signal controls along State Highway 83 and Black Forest Road may create additional gaps in the traffic stream for turning movements at Old Stagecoach Road which could provide mitigation to the LOS F operations projected during both peak traffic hours.

See previous comments regarding progression

The roundabout intersections of Old Stagecoach Road with Allen Ranch Road and Shortwall Drive anticipate turning movement operations at LOS A during both peak traffic hours.

Queue Length Analysis

Queue lengths for the study intersections were analyzed using Year 2042 total traffic conditions. The analysis yields estimate of 95th percentile queue lengths, which have only a five percent probability of being exceeded during the analysis time period. An average vehicle length of 25 feet was assumed. Queue lengths were modeled and are included with the Synchro worksheets in Appendix C and D.

Table 9 summarizes the 95th percentile queue results in comparison to the projected storage requirements for turn movements within study area for Year 2042.

As Table 9 shows, all turn lane lengths at study intersections have sufficient storage to accommodate future traffic volumes. However, at the State Highway 83 intersections with Hodgen Road and North Gate Boulevard, as well as the Black Forest Road intersection with Hodgen Road, various turning movements are projected to have 95th percentile queuing that exceeds existing turn lane lengths.

It is emphasized that this analysis reflects the sketch plan proposed for the overall development. As such, queuing results reflect conceptual land uses and densities being considered. As actual land uses, densities, or site plans within the Flying Horse North Sketch Plan become defined over time, it is expected that evaluation of vehicle queuing will need to be updated by more specific traffic analyses or studies to help assess if transportation improvements are needed to mitigate potential 95th percentile vehicle queues.

Table 9 – Turn Lane Queues and Storage Requirements – Total Traffic – Year 2042

Intersection	Turn Movement	Existing Turn Lane Length (feet)	AM Peak Hour	PM Peak Hour	Recommended Turn Lane Length (feet)	
			95th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)		
Signalized Intersections						
State Highway 83 / Hodgen Road	EB	L	420'	179'	61'	420'
		T	-	141'	372'	-
		R	420'	39'	80'	420'
	WB	L	350'	616'	363'	310' x2
		T	-	269'	204'	-
		R	350'	198'	64'	350'
	NB	L	120'	244'	365'	365'
		T	-	528'	896'	-
		R	650'	40'	179'	650'
	SB	L	525'	166'	579'	580'
T,R		-	1000'	914'	-	
State Highway 83 / North Gate Boulevard	EB	L	225'	179'	317'	320'
		T	-	0'	0'	-
		R	285'	216'	373'	375'
	WB	L,T,R	-	0'	0'	-
		L	900'	889'	658'	900'
		T	-	72'	262'	-
	NB	R	-	0'	0'	-
		L	750'	0'	6'	750'
		T	-	610'	480'	-
		R	730'	86'	51'	730'
State Highway 83 / Shoup Road	WB	L	-	506'	284'	-
		R	500'	222'	55'	500'
	NB	T	-	380'	526'	-
		R	710'	44'	55'	710'
	SB	L	980'	126'	314'	980'
		T	-	419'	171'	-
Black Forest Road / Shoup Road	EB	L,T,R	-	297'	521'	-
	WB	L,T,R	-	197'	89'	-
	NB	L,T,R	-	446'	578'	-
	SB	L,T,R	-	373'	539'	-
Black Forest Road / Hodgen Road	EB	L	400'	12'	35'	400'
		T	-	144'	466'	-
		R	335'	29'	35'	355'
	WB	L	280'	49'	41'	280'
		T,R	-	716'	216'	-
	NB	L	125'	324'	298'	325'
		T,R	-	0'	59'	-
	SB	L	65'	30'	61'	65'
		T,R	-	0'	29'	-

Note: Turn Lane Length does not include taper length.

Key: x2 = Dual Turn Lanes.

Table 9 (Continued) – Turn Lane Queues and Storage Requirements – Total Traffic – Year 2042

Intersection	Turn Movement		Existing Turn Lane Length (feet)	AM Peak Hour	PM Peak Hour	Recommended Turn Lane Length (feet)
				95th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)	
Potential Signalized Intersections						
State Highway 83 / Stagecoach Road	EB	L,T,R	-	16'	0'	-
	WB	L,T	-	190'	263'	-
		R	135'	52'	57'	135'
	NB	L,T	-	180'	337'	-
		R	320'	30'	38'	320'
	SB	L	415'	27'	135'	415'
T,R		-	163'	105'	-	
Black Forest Road / Old Stagecoach Road	EB	L,T,R	-	76'	108'	-
	WB	L,T,R	-	16'	12'	-
		L	-	38'	88'	195'
	NB	T,R	-	51'	75'	-
		L,T	-	114'	127'	-
	SB	R	-	0'	25'	195'
Stop-Controlled Intersections						
State Highway 83 / Stagecoach Road	EB	L,T,R	-	13'	25'	-
	WB	L,T	-	420'	713'	-
		R	135'	28'	58'	135'
	NB	L,T	-	0'	0'	-
		R	320'	0'	0'	320'
	SB	L	415'	13'	78'	415'
T,R		-	0'	0'	-	
Black Forest Road / Old Stagecoach Road	EB	L,T,R	-	53'	185'	-
	WB	L,T,R	-	5'	5'	-
		L	-	8'	20'	195'
	NB	T,R	-	0'	0'	-
		L,T	-	0'	0'	-
	SB	R	-	0'	0'	195'
Black Forrest Road / Hodgen Road	EB	L,T	-	0'	0'	-
	WB	T,R	-	0'	0'	-
	SB	L,R	-	3'	0'	-
Roundabout Intersections						
Old Stagecoach Road / Allen Ranch Road	EB	T,R	-	0'	50'	
	WB	L,T	-	25'	25'	
	NB	L,R	-	0'	0'	
Old Stagecoach Road / Shortwall Drive	EB	T,R	-	25'	50'	
	WB	L,T	-	25'	25'	
	NB	L,R	-	0'	0'	

Note: Turn Lane Length does not include taper length.

VII. Conclusion

This traffic impact study is provided as a planning document and addressed the capacity, geometric, and control requirements associated with the development entitled Flying Horse North. This proposed mixed-use development consists of a variety of residential, commercial, recreational, and lodging land uses. The development is located along Old Stagecoach Road between State Highway 83 and Black Forest Road in El Paso County, Colorado.

The study area examined in this analysis encompassed the Hodgen Road intersections with State Highway 83 and Black Forest Road, the Old Stagecoach Road intersections with State Highway 83, Shortwall Drive, Allen Ranch Road, and Black Forest Road, the North Gate Boulevard intersection with State Highway 83, and the Shoup Road intersections with State Highway 83 and Black Forest Road.

Analysis was conducted for critical AM Peak Hour and PM Peak Hour traffic operations for existing traffic conditions, Year 2027 and Year 2042 background traffic conditions, and Year 2027 and Year 2042 total traffic conditions.

Analysis of existing traffic conditions indicates that all signalized intersections within the study area have operations at LOS C or better during morning and afternoon peak traffic hours. The stop-controlled intersections within the study area have turning movement operations at or better than LOS D during either peak traffic hour. The roundabout intersections along Old Stagecoach Road experience LOS A turning movement operations during both the morning and afternoon peak traffic hour.

Without the proposed development, Year 2027 background operational analysis shows that all signalized intersections within the study area experience overall operations at or better than LOS C during both the morning and afternoon peak traffic hours. All stop-controlled intersections within the study area have turning movement operations at or better than LOS D during the morning peak traffic hour and LOS C or better during the afternoon peak traffic hour. Exceptions would include the westbound left and through turning movement at State Highway 83 and Stagecoach Road, which operates at LOS E during either peak traffic hour. The LOS E operation is attributed to the through traffic volume along State Highway 83 and the stop-controlled nature of the intersection. The roundabout intersections along Old Stagecoach Road are shown to have turning movement operations at LOS A during both the morning and afternoon peak traffic hours.

By Year 2042 and without the proposed development, all signalized intersections within the study area are expected to have overall operations at or better than LOS D during both the morning and afternoon peak traffic hours. The exception includes the State Highway 83 and North Gate Boulevard intersection which shows overall LOS F operation during the morning peak traffic hour. The LOS F operation is attributed to the northbound left turning volumes and conflicting southbound through volumes. A possible mitigation to the anticipated LOS F operation could be the implementation of dual northbound left turn lanes that could allow for an overall LOS D operation. All stop-controlled intersections within the study area project turning movement operations at or better than LOS D during both peak traffic hours. Exceptions still include the westbound left and through turning movement at State Highway 83 and Stagecoach Road, which operates at LOS F during either peak traffic hour. The LOS F operations are attributed to the through traffic volume along State Highway 83 and the stop-controlled nature of

the intersection. Although the study intersection of State Highway 83 and Stagecoach Road does not meet MUTCD's vehicle volumes requirements for consideration of traffic signal control, signalization at the intersection could provide relief to the levels of service indicated under stop control conditions. Both roundabout intersections along Old Stagecoach Road are shown to have turning movement operations at LOS A during both the morning and afternoon peak traffic hours.

It has been emphasized throughout this study that it is not uncommon for unsignalized movements to or from an arterial roadway, in urban areas, to operate with noticeable delays during peak traffic hours. It is, however, likely that turn movements will operate better than the results obtained with this HCM Two Way Stop Control (TWSC) level of service analysis would indicate, as the HCM analysis limitations may not accurately account for the effect of vehicle platooning and gaps caused by upstream signals. Upstream signal controls along State Highway 83 may create additional gaps in the traffic stream for turning movements at Stagecoach Road which could provide mitigation to the LOS F operations projected during both peak traffic hours.

See previous comments
regarding progression

Analysis of future traffic conditions indicates that the addition of site-generated traffic is expected to create minimal negative impact to traffic operations for the existing and surrounding roadway system upon roadway and intersection control improvements assumed within this analysis. With all conservative assumptions defined in this analysis, the study intersections are projected to operate at future levels of service comparable to Year 2042 background traffic conditions. Proposed site accesses have long-term operations at LOS D or better during peak traffic periods and upon assumed development build-out.

In or to mitigate anticipated poor intersection operations at the intersection of State Highway 83 with Hodgen Road, consideration of alternate signal timing, additional turn lanes, and an additional southbound through lane could reduce overall intersection delay and better accommodate vehicle queue lengths. At the State Highway 83 and North Gate Boulevard intersection, operational mitigation solutions may include implementing dual northbound left turn lanes and optimized signal timing in order to achieve overall LOS D intersection operations. At stop-controlled intersections reporting poor turning movement operations, signalization is a possible solution that is projected to allow for acceptable overall intersection operations.

This summary is incomplete.

- SH 83 / Hodgen goes to LOS E/F with site traffic and requires improvements per text on page 34.
- SH 83 / North Gate goes to LOS E (PM) with site traffic and requires improvements per text on page 35.
- Black Forest at Shoup goes to LOS F (PM) with site traffic and requires improvements per text on page 35.
- Signal warrants are met by site traffic at Old Stagecoach / SH 83 and Old Stagecoach / Black Forest (page 26), and the text on page 35 states that signalization is required to provide adequate LOS.

State whether or not any improvements affected by the project are reimbursable under the current MTCP.

State whether the MTCP or other approved corridor study calls for the construction of improvements in the immediate area.

State that the Transportation Impact Fee applies to the properties in the sketch plan and what option (full fee, inclusion into a public improvement district) the developer is planning for payment as development progress.

Add a reference section for all other traffic studies the consultant referenced in preparation of the TIS and state whether the current study is consistent with those studies and explain any discrepancies.

APPENDIX A

**Traffic Count Data
Signal Timing Information**



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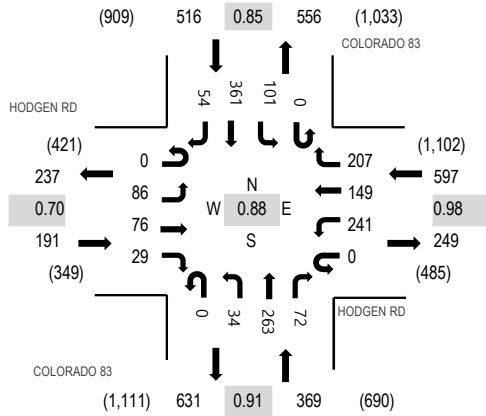
Location: 5 COLORADO 83 & HODGEN RD AM

Date: Tuesday, November 30, 2021

Peak Hour: 07:15 AM - 08:15 AM

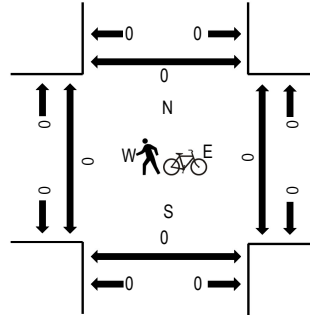
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	HODGEN RD Eastbound				HODGEN RD Westbound				COLORADO 83 Northbound				COLORADO 83 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	9	11	10	0	64	26	65	0	5	41	10	0	21	56	2	320	1,626	0	0	0	0
7:15 AM	0	27	17	4	0	70	45	46	0	8	67	14	0	19	79	6	402	1,673	0	0	0	0
7:30 AM	0	39	19	10	0	74	33	55	0	5	73	15	0	36	98	17	474	1,590	0	0	0	0
7:45 AM	0	12	27	6	0	57	47	55	0	10	56	20	0	22	89	29	430	1,494	0	0	0	0
8:00 AM	0	8	13	9	0	40	24	51	0	11	67	23	0	24	95	2	367	1,424	0	0	0	0
8:15 AM	0	12	19	4	0	33	27	36	0	13	52	19	0	25	75	4	319		0	0	0	0
8:30 AM	0	20	21	7	0	44	37	53	0	9	66	19	0	32	67	3	378		0	0	0	0
8:45 AM	0	14	20	11	0	42	31	47	0	10	62	15	0	24	67	17	360		0	0	0	0
Count Total	0	141	147	61	0	424	270	408	0	71	484	135	0	203	626	80	3,050		0	0	0	0
Peak Hour	0	86	76	29	0	241	149	207	0	34	263	72	0	101	361	54	1,673		0	0	0	0



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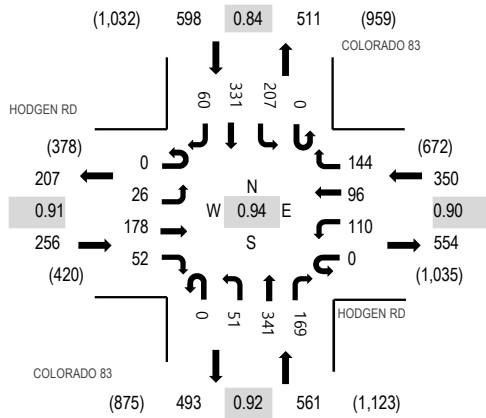
Location: 5 COLORADO 83 & HODGEN RD PM

Date: Tuesday, November 30, 2021

Peak Hour: 04:00 PM - 05:00 PM

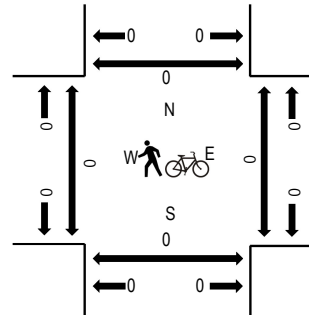
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	HODGEN RD Eastbound				HODGEN RD Westbound				COLORADO 83 Northbound				COLORADO 83 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	9	32	21	0	23	22	28	0	18	73	35	0	59	89	31	440	1,765	0	0	0	0
4:15 PM	0	3	52	15	0	33	20	46	0	10	101	51	0	53	75	9	468	1,741	0	0	0	0
4:30 PM	0	7	46	7	0	33	23	29	0	6	73	48	0	52	78	13	415	1,660	0	0	0	0
4:45 PM	0	7	48	9	0	21	31	41	0	17	94	35	0	43	89	7	442	1,613	0	0	0	0
5:00 PM	0	2	42	12	0	33	22	32	0	12	100	48	0	55	51	7	416	1,482	0	0	0	0
5:15 PM	0	3	28	3	0	38	35	29	0	15	70	35	0	55	71	5	387		0	0	0	0
5:30 PM	0	6	33	6	0	30	17	30	0	13	84	47	0	27	69	6	368		0	0	0	0
5:45 PM	0	3	21	5	0	18	22	16	0	12	73	53	0	37	46	5	311		0	0	0	0
Count Total	0	40	302	78	0	229	192	251	0	103	668	352	0	381	568	83	3,247		0	0	0	0
Peak Hour	0	26	178	52	0	110	96	144	0	51	341	169	0	207	331	60	1,765		0	0	0	0



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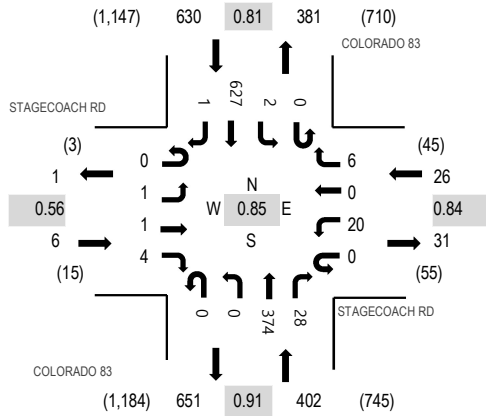
Location: 8 COLORADO 83 & STAGECOACH RD AM

Date: Tuesday, November 30, 2021

Peak Hour: 07:15 AM - 08:15 AM

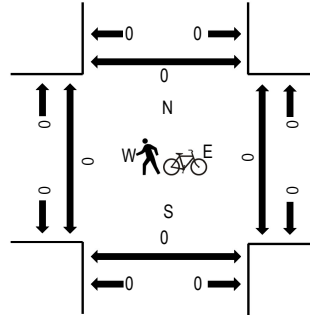
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	STAGECOACH RD Eastbound				STAGECOACH RD Westbound				COLORADO 83 Northbound				COLORADO 83 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	1	0	3	0	5	0	3	0	0	49	6	0	1	132	0	200	1,040	0	0	0	0
7:15 AM	0	1	1	1	0	3	0	1	0	0	92	2	0	0	155	0	256	1,064	0	0	0	0
7:30 AM	0	0	0	0	0	6	0	2	0	0	93	9	0	1	202	1	314	1,033	0	0	0	0
7:45 AM	0	0	0	2	0	5	0	2	0	0	85	8	0	1	167	0	270	944	0	0	0	0
8:00 AM	0	0	0	1	0	6	0	1	0	0	104	9	0	0	103	0	224	912	0	0	0	0
8:15 AM	0	0	0	2	0	2	0	2	0	0	98	7	0	0	114	0	225		0	0	0	0
8:30 AM	0	0	0	3	0	2	1	0	0	0	85	2	0	2	130	0	225		0	0	0	0
8:45 AM	0	0	0	0	0	3	0	1	0	1	90	5	0	1	137	0	238		0	0	0	0
Count Total	0	2	1	12	0	32	1	12	0	1	696	48	0	6	1,140	1	1,952		0	0	0	0
Peak Hour	0	1	1	4	0	20	0	6	0	0	374	28	0	2	627	1	1,064		0	0	0	0



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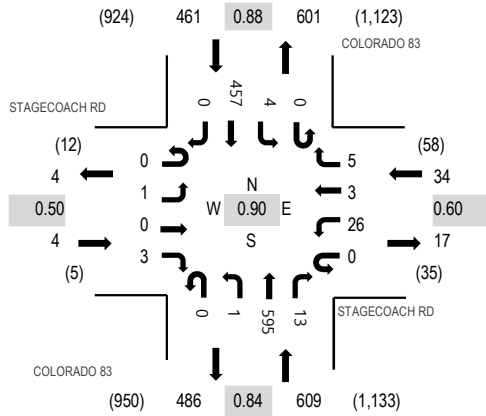
Location: 8 COLORADO 83 & STAGECOACH RD PM

Date: Tuesday, November 30, 2021

Peak Hour: 04:30 PM - 05:30 PM

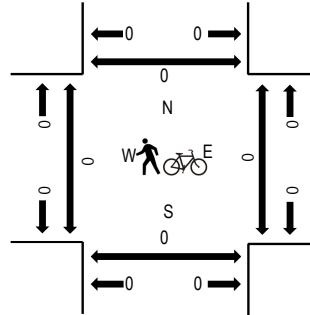
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	STAGECOACH RD Eastbound				STAGECOACH RD Westbound				COLORADO 83 Northbound				COLORADO 83 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	3	0	6	0	1	112	3	0	3	123	0	251	1,066	0	0	0	0
4:15 PM	0	1	0	0	0	3	1	3	0	1	143	3	0	2	133	0	290	1,089	0	0	0	0
4:30 PM	0	1	0	1	0	8	0	0	0	0	140	3	0	0	98	0	251	1,108	0	0	0	0
4:45 PM	0	0	0	1	0	2	1	3	0	0	153	2	0	1	111	0	274	1,096	0	0	0	0
5:00 PM	0	0	0	0	0	11	2	2	0	1	126	2	0	0	130	0	274	1,054	0	0	0	0
5:15 PM	0	0	0	1	0	5	0	0	0	0	176	6	0	3	118	0	309		0	0	0	0
5:30 PM	0	0	0	0	0	2	1	1	0	2	127	3	0	0	102	1	239		0	0	0	0
5:45 PM	0	0	0	0	0	1	0	3	0	1	126	2	0	2	97	0	232		0	0	0	0
Count Total	0	2	0	3	0	35	5	18	0	6	1,103	24	0	11	912	1	2,120		0	0	0	0
Peak Hour	0	1	0	3	0	26	3	5	0	1	595	13	0	4	457	0	1,108		0	0	0	0



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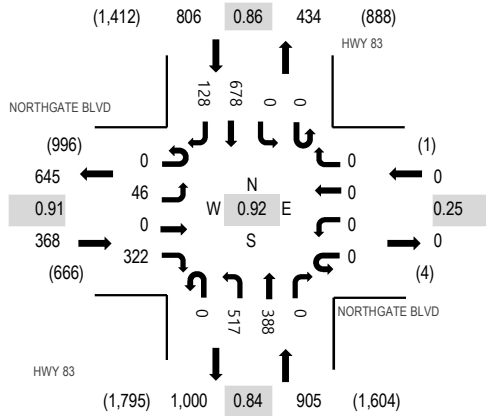
Location: 9 HWY 83 & NORTHGATE BLVD AM

Date: Tuesday, November 30, 2021

Peak Hour: 07:00 AM - 08:00 AM

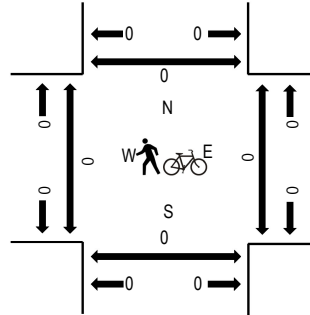
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	NORTHGATE BLVD Eastbound				NORTHGATE BLVD Westbound				HWY 83 Northbound				HWY 83 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	6	0	74	0	0	0	0	0	111	76	0	0	0	147	23	437	2,079	0	0	0	0
7:15 AM	0	9	0	78	0	0	0	0	0	160	112	0	0	0	159	41	559	2,056	0	0	0	0
7:30 AM	0	15	0	89	0	0	0	0	0	132	92	0	0	0	203	32	563	1,910	0	0	0	0
7:45 AM	0	16	0	81	0	0	0	0	0	114	108	0	0	0	169	32	520	1,743	0	0	0	0
8:00 AM	0	12	0	79	0	0	0	0	0	85	106	1	0	1	115	15	414	1,604	0	0	0	0
8:15 AM	0	16	0	67	0	0	0	0	0	68	108	0	0	0	138	16	413		0	0	0	0
8:30 AM	0	12	0	54	0	0	0	0	0	68	97	0	0	0	151	14	396		0	0	0	0
8:45 AM	0	10	1	47	0	0	0	1	0	73	92	1	0	0	144	12	381		0	0	0	0
Count Total	0	96	1	569	0	0	0	1	0	811	791	2	0	1	1,226	185	3,683		0	0	0	0
Peak Hour	0	46	0	322	0	0	0	0	0	517	388	0	0	0	678	128	2,079		0	0	0	0



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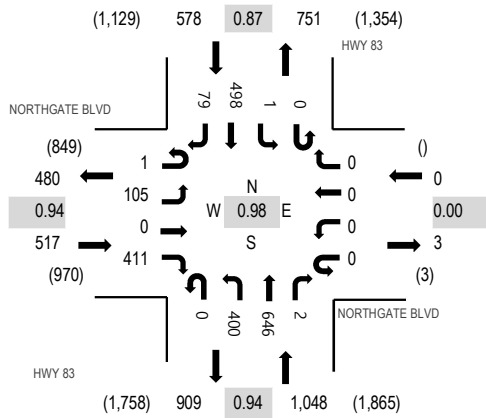
Location: 9 HWY 83 & NORTHGATE BLVD PM

Date: Tuesday, November 30, 2021

Peak Hour: 04:30 PM - 05:30 PM

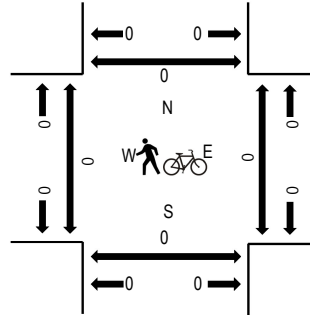
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	NORTHGATE BLVD Eastbound				NORTHGATE BLVD Westbound				HWY 83 Northbound				HWY 83 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	26	0	118	0	0	0	0	0	78	130	0	0	0	129	18	499	2,041	0	0	0	0
4:15 PM	0	23	0	105	0	0	0	0	0	80	135	0	0	0	121	23	487	2,087	0	0	0	0
4:30 PM	0	25	0	112	0	0	0	0	0	100	162	0	0	0	117	18	534	2,143	0	0	0	0
4:45 PM	0	29	0	102	0	0	0	0	0	101	160	2	0	1	107	19	521	2,045	0	0	0	0
5:00 PM	1	21	0	110	0	0	0	0	0	103	142	0	0	0	147	21	545	1,923	0	0	0	0
5:15 PM	0	30	0	87	0	0	0	0	0	96	182	0	0	0	127	21	543		0	0	0	0
5:30 PM	0	19	0	65	0	0	0	0	0	83	129	0	0	0	133	7	436		0	0	0	0
5:45 PM	0	24	0	73	0	0	0	0	0	65	117	0	0	0	105	15	399		0	0	0	0
Count Total	1	197	0	772	0	0	0	0	0	706	1,157	2	0	1	986	142	3,964		0	0	0	0
Peak Hour	1	105	0	411	0	0	0	0	0	400	646	2	0	1	498	79	2,143		0	0	0	0



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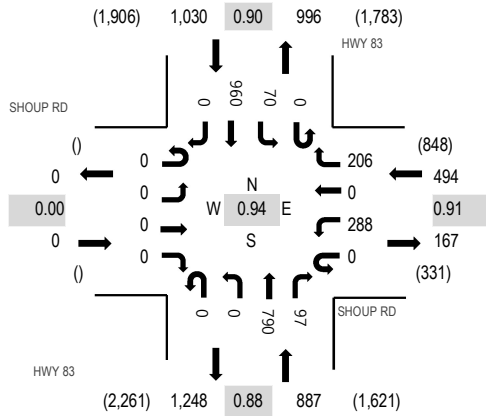
Location: 10 HWY 83 & SHOUP RD AM

Date: Tuesday, November 30, 2021

Peak Hour: 07:15 AM - 08:15 AM

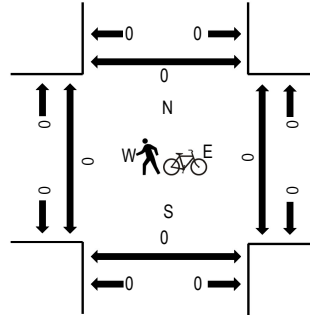
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	SHOUP RD Eastbound				SHOUP RD Westbound				HWY 83 Northbound				HWY 83 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	55	0	51	0	0	156	8	0	6	224	0	500	2,399	0	0	0	0
7:15 AM	0	0	0	0	0	66	0	67	0	0	232	20	0	11	245	0	641	2,411	0	0	0	0
7:30 AM	0	0	0	0	0	85	0	53	0	0	176	20	0	22	270	0	626	2,260	0	0	0	0
7:45 AM	0	0	0	0	0	79	0	49	0	0	203	28	0	20	253	0	632	2,127	0	0	0	0
8:00 AM	0	0	0	0	0	58	0	37	0	0	179	29	0	17	192	0	512	1,976	0	0	0	0
8:15 AM	0	0	0	0	0	51	0	23	0	0	171	22	0	28	195	0	490		0	0	0	0
8:30 AM	0	0	0	0	0	54	0	23	0	0	171	23	0	20	202	0	493		0	0	0	0
8:45 AM	0	0	0	0	0	57	0	40	0	0	152	31	0	26	175	0	481		0	0	0	0
Count Total	0	0	0	0	0	505	0	343	0	0	1,440	181	0	150	1,756	0	4,375		0	0	0	0
Peak Hour	0	0	0	0	0	288	0	206	0	0	790	97	0	70	960	0	2,411		0	0	0	0



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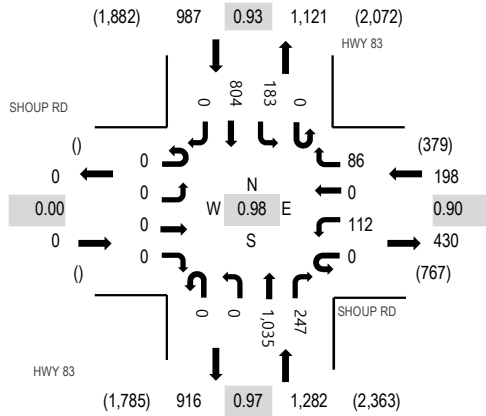
Location: 10 HWY 83 & SHOUP RD PM

Date: Tuesday, November 30, 2021

Peak Hour: 04:30 PM - 05:30 PM

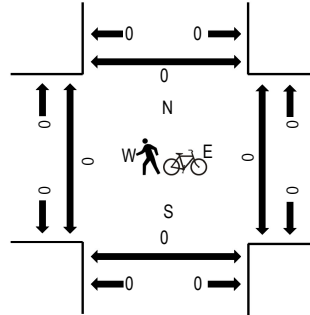
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	SHOUP RD Eastbound				SHOUP RD Westbound				HWY 83 Northbound				HWY 83 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	26	0	26	0	0	237	55	0	33	198	0	575	2,408	0	0	0	0
4:15 PM	0	0	0	0	0	36	0	18	0	0	223	54	0	43	233	0	607	2,462	0	0	0	0
4:30 PM	0	0	0	0	0	33	0	24	0	0	271	61	0	38	203	0	630	2,467	0	0	0	0
4:45 PM	0	0	0	0	0	24	0	19	0	0	245	65	0	52	191	0	596	2,336	0	0	0	0
5:00 PM	0	0	0	0	0	22	0	24	0	0	242	73	0	52	216	0	629	2,216	0	0	0	0
5:15 PM	0	0	0	0	0	33	0	19	0	0	277	48	0	41	194	0	612		0	0	0	0
5:30 PM	0	0	0	0	0	21	0	20	0	0	220	46	0	26	166	0	499		0	0	0	0
5:45 PM	0	0	0	0	0	22	0	12	0	0	195	51	0	29	167	0	476		0	0	0	0
Count Total	0	0	0	0	0	217	0	162	0	0	1,910	453	0	314	1,568	0	4,624		0	0	0	0
Peak Hour	0	0	0	0	0	112	0	86	0	0	1,035	247	0	183	804	0	2,467		0	0	0	0



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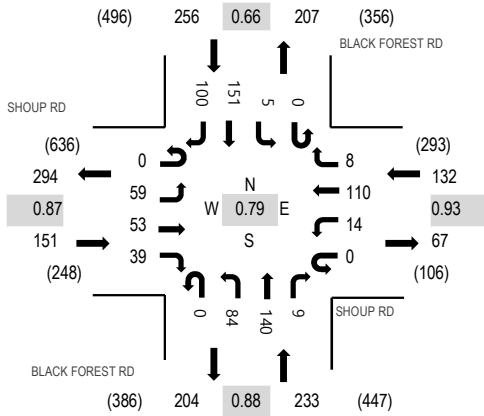
Location: 4 BLACK FOREST RD & SHOUP RD AM

Date: Tuesday, November 30, 2021

Peak Hour: 07:45 AM - 08:45 AM

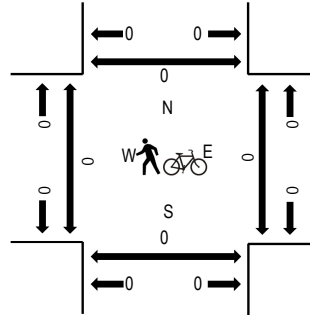
Peak 15-Minutes: 08:30 AM - 08:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	SHOUP RD Eastbound				SHOUP RD Westbound				BLACK FOREST RD Northbound				BLACK FOREST RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	2	3	1	0	0	39	1	0	21	19	1	0	3	28	28	146	718	0	0	0	0
7:15 AM	0	6	7	8	0	3	43	0	0	28	24	0	0	1	28	24	172	729	0	0	0	0
7:30 AM	0	12	6	11	0	4	42	4	0	29	33	1	0	1	33	27	203	731	0	0	0	0
7:45 AM	0	10	10	12	0	3	45	2	0	32	28	0	0	1	30	24	197	772	0	0	0	0
8:00 AM	0	10	10	9	0	5	28	1	0	20	27	1	0	0	23	23	157	766	0	0	0	0
8:15 AM	0	15	19	12	0	3	12	1	0	13	42	4	0	1	33	19	174		0	0	0	0
8:30 AM	0	24	14	6	0	3	25	4	0	19	43	4	0	3	65	34	244		0	0	0	0
8:45 AM	0	15	9	17	0	6	18	1	0	22	32	4	0	3	43	21	191		0	0	0	0
Count Total	0	94	78	76	0	27	252	14	0	184	248	15	0	13	283	200	1,484		0	0	0	0
Peak Hour	0	59	53	39	0	14	110	8	0	84	140	9	0	5	151	100	772		0	0	0	0



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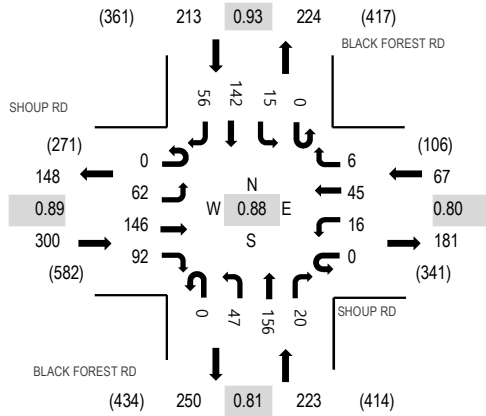
Location: 4 BLACK FOREST RD & SHOUP RD PM

Date: Tuesday, November 30, 2021

Peak Hour: 04:00 PM - 05:00 PM

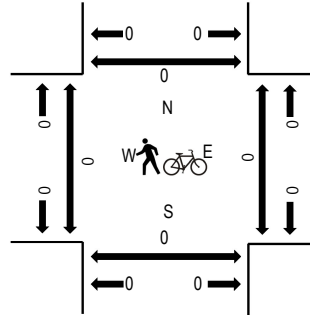
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	SHOUP RD Eastbound				SHOUP RD Westbound				BLACK FOREST RD Northbound				BLACK FOREST RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	19	41	24	0	4	10	4	0	9	49	11	0	3	38	16	228	803	0	0	0	0
4:15 PM	0	17	37	24	0	7	13	1	0	16	44	4	0	6	34	8	211	744	0	0	0	0
4:30 PM	0	10	30	21	0	3	14	1	0	9	32	2	0	5	35	15	177	712	0	0	0	0
4:45 PM	0	16	38	23	0	2	8	0	0	13	31	3	0	1	35	17	187	703	0	0	0	0
5:00 PM	0	16	40	16	0	2	5	1	0	15	32	5	0	3	21	13	169	660	0	0	0	0
5:15 PM	0	15	35	18	0	1	8	0	0	22	32	3	0	1	34	10	179		0	0	0	0
5:30 PM	0	19	33	21	0	2	6	1	0	7	34	5	0	1	25	14	168		0	0	0	0
5:45 PM	0	22	25	22	0	2	11	0	0	8	21	7	0	2	20	4	144		0	0	0	0
Count Total	0	134	279	169	0	23	75	8	0	99	275	40	0	22	242	97	1,463		0	0	0	0
Peak Hour	0	62	146	92	0	16	45	6	0	47	156	20	0	15	142	56	803		0	0	0	0



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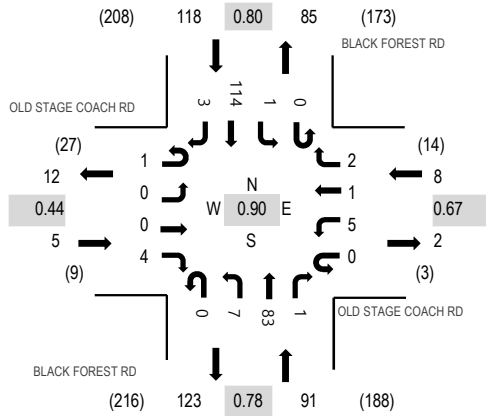
Location: 3 BLACK FOREST RD & OLD STAGE COACH RD AM

Date: Tuesday, November 30, 2021

Peak Hour: 08:00 AM - 09:00 AM

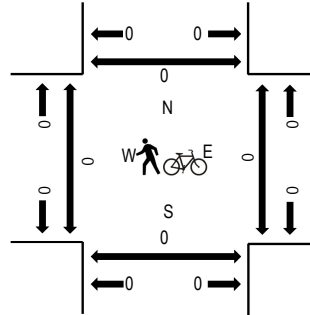
Peak 15-Minutes: 08:30 AM - 08:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	OLD STAGE COACH RD Eastbound				OLD STAGE COACH RD Westbound				BLACK FOREST RD Northbound				BLACK FOREST RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	1	0	0	0	0	0	2	15	0	0	0	18	0	36	197	0	0	0	0
7:15 AM	0	0	0	1	0	0	3	1	0	3	28	0	0	0	20	0	56	199	0	0	0	0
7:30 AM	0	0	0	0	0	1	0	1	0	2	26	0	0	0	29	0	59	203	0	0	0	0
7:45 AM	0	0	1	1	0	0	0	0	0	4	17	0	0	0	22	1	46	206	0	0	0	0
8:00 AM	0	0	0	1	0	1	0	0	0	1	16	0	0	1	18	0	38	222	0	0	0	0
8:15 AM	0	0	0	0	0	2	1	0	0	5	20	1	0	0	30	1	60		0	0	0	0
8:30 AM	1	0	0	3	0	2	0	1	0	1	23	0	0	0	31	0	62		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	1	0	0	24	0	0	0	35	2	62		0	0	0	0
Count Total	1	0	1	7	0	6	4	4	0	18	169	1	0	1	203	4	419		0	0	0	0
Peak Hour	1	0	0	4	0	5	1	2	0	7	83	1	0	1	114	3	222		0	0	0	0



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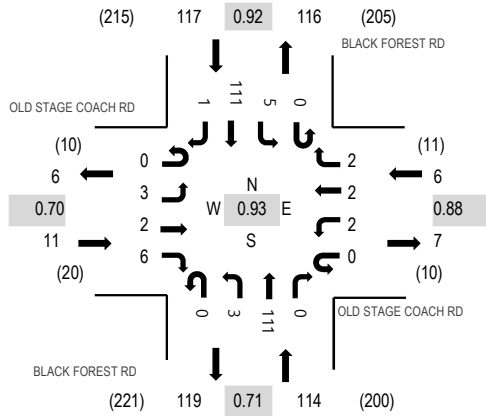
Location: 3 BLACK FOREST RD & OLD STAGE COACH RD PM

Date: Tuesday, November 30, 2021

Peak Hour: 04:00 PM - 05:00 PM

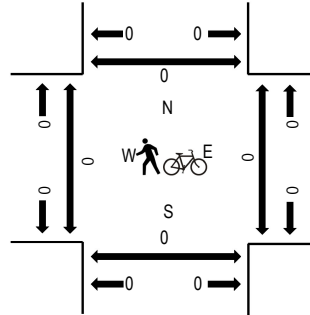
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	OLD STAGE COACH RD Eastbound				OLD STAGE COACH RD Westbound				BLACK FOREST RD Northbound				BLACK FOREST RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	1	1	1	0	0	0	1	0	0	40	0	0	2	21	0	67	248	0	0	0	0
4:15 PM	0	1	0	2	0	1	1	0	0	0	23	0	0	0	26	1	55	242	0	0	0	0
4:30 PM	0	0	0	0	0	1	1	0	0	1	29	0	0	1	33	0	66	242	0	0	0	0
4:45 PM	0	1	1	3	0	0	0	1	0	2	19	0	0	2	31	0	60	217	0	0	0	0
5:00 PM	0	2	0	0	0	1	0	1	0	0	26	0	0	1	29	1	61	198	0	0	0	0
5:15 PM	0	1	0	3	0	1	0	1	0	1	20	1	0	0	26	1	55		0	0	0	0
5:30 PM	0	1	0	2	0	0	1	0	0	0	16	1	0	0	20	0	41		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	21	0	0	0	20	0	41		0	0	0	0
Count Total	0	7	2	11	0	4	3	4	0	4	194	2	0	6	206	3	446		0	0	0	0
Peak Hour	0	3	2	6	0	2	2	2	0	3	111	0	0	5	111	1	248		0	0	0	0



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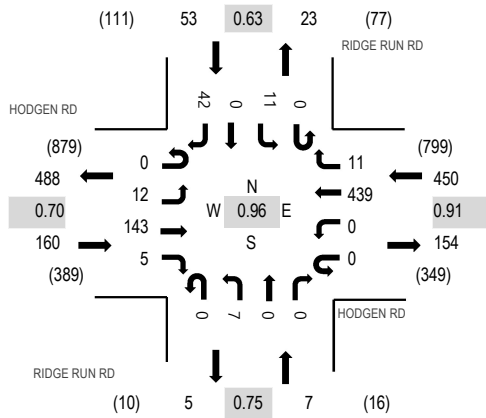
Location: 1 RIDGE RUN RD & HODGEN RD AM

Date: Tuesday, November 30, 2021

Peak Hour: 07:00 AM - 08:00 AM

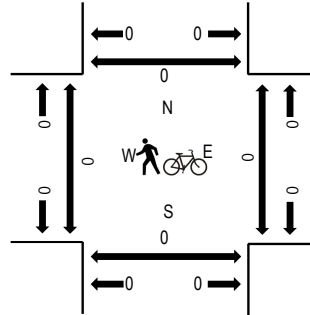
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	HODGEN RD				HODGEN RD				RIDGE RUN RD				RIDGE RUN RD				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	2	34	1	0	0	103	1	0	1	0	0	0	3	0	8	153	670	0	0	0	0
7:15 AM	0	3	24	2	0	0	122	2	0	4	0	0	0	2	0	15	174	666	0	0	0	0
7:30 AM	0	5	41	1	0	0	113	2	0	1	0	0	0	1	0	10	174	621	0	0	0	0
7:45 AM	0	2	44	1	0	0	101	6	0	1	0	0	0	5	0	9	169	639	0	0	0	0
8:00 AM	0	6	32	2	0	0	94	3	0	2	0	0	0	1	0	9	149	645	0	0	0	0
8:15 AM	0	4	30	2	0	0	74	7	0	1	0	1	0	0	0	10	129		0	0	0	0
8:30 AM	0	8	62	1	0	0	95	8	0	3	0	0	0	0	0	15	192		0	0	0	0
8:45 AM	0	16	66	0	0	0	66	2	0	2	0	0	0	3	0	20	175		0	0	0	0
Count Total	0	46	333	10	0	0	768	31	0	15	0	1	0	15	0	96	1,315		0	0	0	0
Peak Hour	0	12	143	5	0	0	439	11	0	7	0	0	0	11	0	42	670		0	0	0	0



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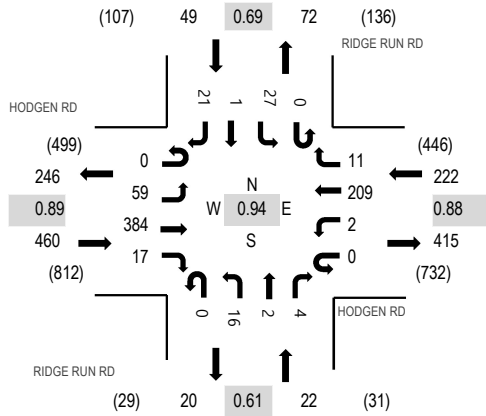
Location: 1 RIDGE RUN RD & HODGEN RD PM

Date: Tuesday, November 30, 2021

Peak Hour: 04:00 PM - 05:00 PM

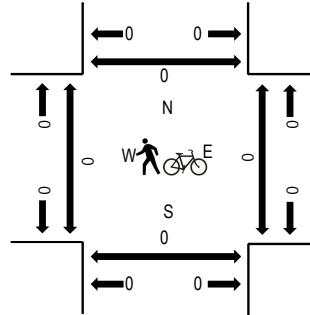
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	HODGEN RD Eastbound				HODGEN RD Westbound				RIDGE RUN RD Northbound				RIDGE RUN RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	18	87	10	0	1	45	6	0	4	0	0	0	13	0	5	189	753	0	0	0	0
4:15 PM	0	16	92	2	0	1	56	1	0	2	1	2	0	6	0	7	186	746	0	0	0	0
4:30 PM	0	14	111	4	0	0	56	2	0	2	0	2	0	5	0	5	201	745	0	0	0	0
4:45 PM	0	11	94	1	0	0	52	2	0	8	1	0	0	3	1	4	177	692	0	0	0	0
5:00 PM	0	11	81	4	0	0	62	7	0	0	0	1	0	2	0	14	182	643	0	0	0	0
5:15 PM	0	12	84	2	0	0	57	3	0	6	0	0	0	10	0	11	185		0	0	0	0
5:30 PM	0	10	67	0	0	0	52	7	0	1	0	0	0	2	0	9	148		0	0	0	0
5:45 PM	0	11	68	2	0	0	33	3	0	1	0	0	0	2	1	7	128		0	0	0	0
Count Total	0	103	684	25	0	2	413	31	0	24	2	5	0	43	2	62	1,396		0	0	0	0
Peak Hour	0	59	384	17	0	2	209	11	0	16	2	4	0	27	1	21	753		0	0	0	0



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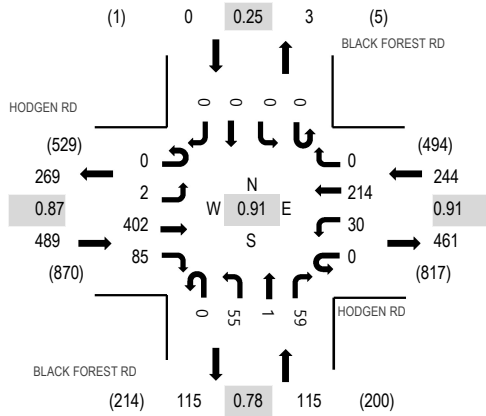
Location: 2 BLACK FOREST RD & HODGEN RD PM

Date: Tuesday, November 30, 2021

Peak Hour: 04:00 PM - 05:00 PM

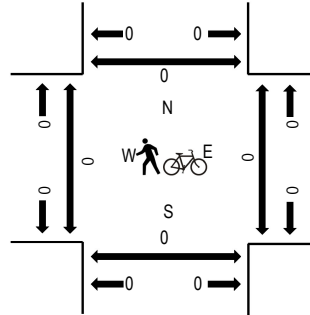
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	HODGEN RD Eastbound				HODGEN RD Westbound				BLACK FOREST RD Northbound				BLACK FOREST RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	100	19	0	5	48	0	0	14	1	22	0	0	0	0	209	848	0	0	0	0
4:15 PM	0	0	95	19	0	7	56	0	0	17	0	10	0	0	0	0	204	843	0	0	0	0
4:30 PM	0	1	117	23	0	9	55	0	0	13	0	16	0	0	0	0	234	843	0	0	0	0
4:45 PM	0	1	90	24	0	9	55	0	0	11	0	11	0	0	0	0	201	774	0	0	0	0
5:00 PM	0	0	84	23	0	11	63	0	0	11	0	12	0	0	0	0	204	717	0	0	0	0
5:15 PM	0	0	87	15	0	8	67	1	0	14	0	11	0	1	0	0	204		0	0	0	0
5:30 PM	0	1	71	14	0	9	52	0	0	13	0	5	0	0	0	0	165		0	0	0	0
5:45 PM	0	0	71	15	0	4	35	0	0	5	0	14	0	0	0	0	144		0	0	0	0
Count Total	0	3	715	152	0	62	431	1	0	98	1	101	0	1	0	0	1,565		0	0	0	0
Peak Hour	0	2	402	85	0	30	214	0	0	55	1	59	0	0	0	0	848		0	0	0	0

Interval Start Time	OLD STAGE COACH RD				OLD STAGE COACH RD				ALLEN RANCH RD				ALLEN RANCH RD				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
7:00 AM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	30	0	0	0	0
7:15 AM	0	0	2	0	0	0	7	0	0	0	0	0	0	0	0	0	9	33	0	0	0	0
7:30 AM	0	0	0	1	0	2	3	0	0	0	0	1	0	0	0	0	7	31	0	0	0	0
7:45 AM	1	0	1	2	0	1	5	0	0	0	0	1	0	0	0	0	11	31	0	0	0	0
8:00 AM	0	0	0	1	0	0	4	0	0	0	0	1	0	0	0	0	6	24	0	0	0	0
8:15 AM	0	0	1	0	0	0	5	0	0	1	0	0	0	0	0	0	7		0	0	0	0
8:30 AM	0	0	1	1	0	0	3	0	0	1	0	1	0	0	0	0	7		0	0	0	0
8:45 AM	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	4		0	0	0	0
Count Total	1	0	5	5	0	3	32	0	0	2	0	6	0	0	0	0	54		0	0	0	0
Peak Hour	1	0	3	4	0	3	19	0	0	0	0	3	0	0	0	0	33		0	0	0	0



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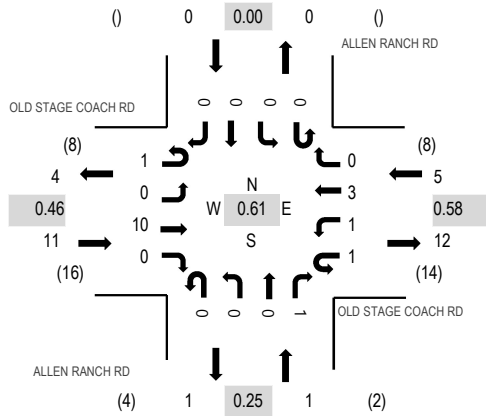
Location: 6 ALLEN RANCH RD & OLD STAGE COACH RD PM

Date: Tuesday, November 30, 2021

Peak Hour: 04:00 PM - 05:00 PM

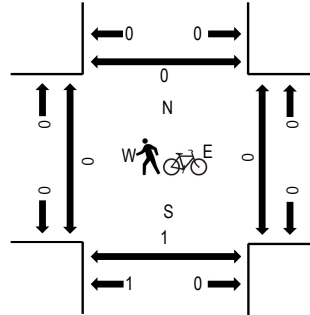
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	OLD STAGE COACH RD Eastbound				OLD STAGE COACH RD Westbound				ALLEN RANCH RD Northbound				ALLEN RANCH RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	6	0	0	1	0	0	0	0	0	0	0	0	0	0	7	17	0	0	1	0
4:15 PM	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2	15	0	0	0	0
4:30 PM	0	0	3	0	1	0	2	0	0	0	0	0	0	0	0	0	6	15	0	0	0	0
4:45 PM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	11	0	0	0	0
5:00 PM	0	0	2	0	0	1	2	0	0	0	0	0	0	0	0	0	5	9	0	0	0	0
5:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2		0	0	0	0
5:30 PM	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	2		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0
Count Total	2	0	12	2	1	2	5	0	0	1	0	1	0	0	0	0	26		0	0	1	0
Peak Hour	1	0	10	0	1	1	3	0	0	0	0	1	0	0	0	0	17		0	0	1	0



ALL TRAFFIC DATA SERVICES

(303) 216-2439

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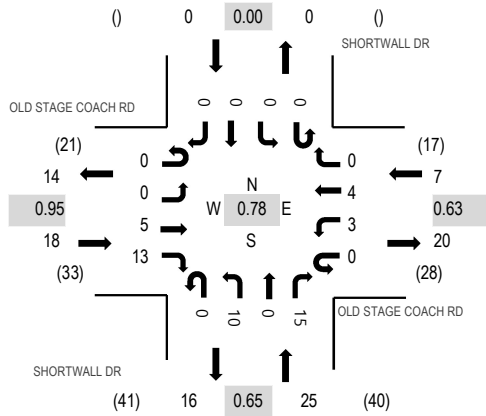
Location: 7 SHORTWALL DR & OLD STAGE COACH RD AM

Date: Tuesday, November 30, 2021

Peak Hour: 07:30 AM - 08:30 AM

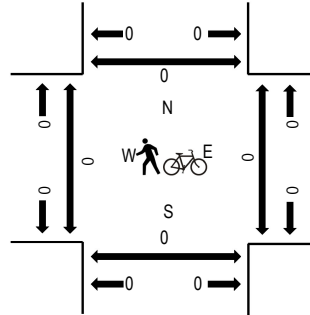
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	OLD STAGE COACH RD Eastbound				OLD STAGE COACH RD Westbound				SHORTWALL DR Northbound				SHORTWALL DR Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	1	4	0	4	0	0	0	3	0	1	0	0	0	0	13	49	0	0	0	0
7:15 AM	0	0	0	5	0	3	0	0	0	1	0	1	0	0	0	0	10	47	0	0	0	0
7:30 AM	0	0	0	5	0	1	0	0	0	3	0	1	0	0	0	0	10	50	0	0	0	0
7:45 AM	0	0	2	2	0	0	2	0	0	5	0	5	0	0	0	0	16	50	0	0	0	0
8:00 AM	0	0	2	3	0	0	1	0	0	0	0	5	0	0	0	0	11	41	0	0	0	0
8:15 AM	0	0	1	3	0	2	1	0	0	2	0	4	0	0	0	0	13		0	0	0	0
8:30 AM	0	0	0	3	0	2	0	0	0	2	0	3	0	0	0	0	10		0	0	0	0
8:45 AM	0	0	0	2	0	1	0	0	1	1	0	2	0	0	0	0	7		0	0	0	0
Count Total	0	0	6	27	0	13	4	0	1	17	0	22	0	0	0	0	90		0	0	0	0
Peak Hour	0	0	5	13	0	3	4	0	0	10	0	15	0	0	0	0	50		0	0	0	0



ALL TRAFFIC DATA SERVICES

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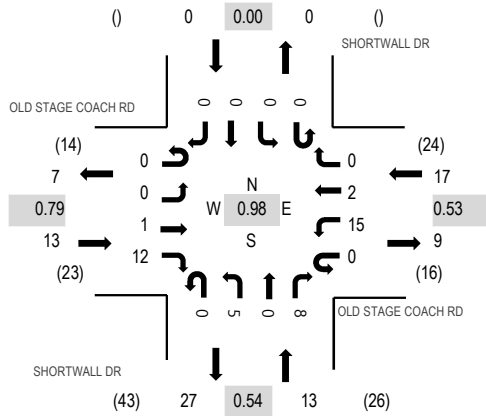
Location: 7 SHORTWALL DR & OLD STAGE COACH RD PM

Date: Tuesday, November 30, 2021

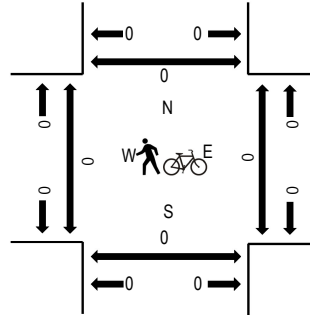
Peak Hour: 04:00 PM - 05:00 PM

Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	OLD STAGE COACH RD				OLD STAGE COACH RD				SHORTWALL DR				SHORTWALL DR				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
4:00 PM	0	0	0	0	0	8	0	0	0	2	0	1	0	0	0	0	11	43	0	0	0	0
4:15 PM	0	0	0	4	0	1	0	0	0	1	0	4	0	0	0	0	10	41	0	0	0	0
4:30 PM	0	0	0	3	0	3	1	0	0	2	0	2	0	0	0	0	11	39	0	0	0	0
4:45 PM	0	0	1	5	0	3	1	0	0	0	0	1	0	0	0	0	11	36	0	0	0	0
5:00 PM	0	0	0	6	0	2	0	0	0	0	0	1	0	0	0	0	9	30	0	0	0	0
5:15 PM	0	0	0	0	0	2	0	0	0	2	0	4	0	0	0	0	8		0	0	0	0
5:30 PM	0	0	0	2	0	2	0	0	0	2	0	2	0	0	0	0	8		0	0	0	0
5:45 PM	0	0	0	2	0	0	1	0	0	2	0	0	0	0	0	0	5		0	0	0	0
Count Total	0	0	1	22	0	21	3	0	0	11	0	15	0	0	0	0	73		0	0	0	0
Peak Hour	0	0	1	12	0	15	2	0	0	5	0	8	0	0	0	0	43		0	0	0	0

Site Code: 11
Station ID: 11
BLACK FOREST RD S.O. HODGEN RD

Latitude: 0' 0.0000 Undefined

Start Time	30-Nov-21 Tue	NB	SB	Total
12:00 AM		0	2	2
01:00		0	1	1
02:00		0	2	2
03:00		2	0	2
04:00		9	1	10
05:00		25	13	38
06:00		55	53	108
07:00		92	87	179
08:00		83	125	208
09:00		71	86	157
10:00		77	79	156
11:00		58	64	122
12:00 PM		68	61	129
01:00		78	75	153
02:00		84	89	173
03:00		138	126	264
04:00		111	116	227
05:00		83	94	177
06:00		42	44	86
07:00		24	34	58
08:00		20	16	36
09:00		10	16	26
10:00		8	5	13
11:00		5	8	13
Total		1143	1197	2340
Percent		48.8%	51.2%	
AM Peak	-	07:00	08:00	-
Vol.	-	92	125	-
PM Peak	-	15:00	15:00	-
Vol.	-	138	126	-
Grand Total		1143	1197	2340
Percent		48.8%	51.2%	
ADT		ADT 2,340		AADT 2,340

Site Code: 12
Station ID: 12
HODGEN RD W.O. BLACK FOREST RD

Latitude: 0' 0.0000 Undefined

Start Time	30-Nov-21 Tue	EB	WB	Total
12:00 AM		12	4	16
01:00		7	3	10
02:00		4	9	13
03:00		7	22	29
04:00		7	56	63
05:00		16	155	171
06:00		102	340	442
07:00		187	522	709
08:00		208	377	585
09:00		164	252	416
10:00		185	243	428
11:00		185	223	408
12:00 PM		214	197	411
01:00		223	225	448
02:00		276	237	513
03:00		425	267	692
04:00		495	276	771
05:00		383	266	649
06:00		262	112	374
07:00		171	56	227
08:00		115	37	152
09:00		99	28	127
10:00		44	10	54
11:00		27	7	34
Total		3818	3924	7742
Percent		49.3%	50.7%	
AM Peak	-	08:00	07:00	-
Vol.	-	208	522	-
PM Peak	-	16:00	16:00	-
Vol.	-	495	276	-
Grand Total		3818	3924	7742
Percent		49.3%	50.7%	
ADT		ADT 7,742	AADT 7,742	

Site Code: 14
Station ID: 14
BLACK FOREST RD N.O. SHOUP RD
Latitude: 0' 0.0000 Undefined

Start Time	30-Nov-21 Tue	NB	SB	Total
12:00 AM		4	5	9
01:00		3	1	4
02:00		1	2	3
03:00		1	5	6
04:00		7	14	21
05:00		15	37	52
06:00		58	135	193
07:00		146	231	377
08:00		211	271	482
09:00		111	188	299
10:00		123	158	281
11:00		119	121	240
12:00 PM		158	133	291
01:00		156	117	273
02:00		153	156	309
03:00		304	244	548
04:00		213	208	421
05:00		195	146	341
06:00		136	83	219
07:00		74	35	109
08:00		62	42	104
09:00		44	18	62
10:00		23	11	34
11:00		17	5	22
Total		2334	2366	4700
Percent		49.7%	50.3%	
AM Peak	-	08:00	08:00	-
Vol.	-	211	271	-
PM Peak	-	15:00	15:00	-
Vol.	-	304	244	-
Grand Total		2334	2366	4700
Percent		49.7%	50.3%	
ADT		ADT 4,700	AADT 4,700	

Site Code: 15
Station ID: 15
SHOUP RD W.O. BLACK FOREST RD

Latitude: 0' 0.0000 Undefined

Start Time	30-Nov-21 Tue	EB	WB	Total
12:00 AM		4	4	8
01:00		3	1	4
02:00		1	4	5
03:00		2	4	6
04:00		1	8	9
05:00		6	44	50
06:00		27	181	208
07:00		92	390	482
08:00		151	261	412
09:00		85	161	246
10:00		105	132	237
11:00		100	110	210
12:00 PM		121	122	243
01:00		149	114	263
02:00		146	137	283
03:00		341	221	562
04:00		305	158	463
05:00		271	122	393
06:00		157	96	253
07:00		110	27	137
08:00		85	57	142
09:00		54	18	72
10:00		32	13	45
11:00		15	5	20
Total		2363	2390	4753
Percent		49.7%	50.3%	
AM Peak	-	08:00	07:00	-
Vol.	-	151	390	-
PM Peak	-	15:00	15:00	-
Vol.	-	341	221	-
Grand Total		2363	2390	4753
Percent		49.7%	50.3%	
ADT		ADT 4,753	AADT 4,753	

Site Code: 17
Station ID: 17
HODGEN RD E.O. HWY 83
Latitude: 0' 0.0000 Undefined

Start Time	30-Nov-21 Tue	EB	WB	Total
12:00 AM		17	5	22
01:00		8	3	11
02:00		5	10	15
03:00		7	24	31
04:00		9	60	69
05:00		20	178	198
06:00		117	403	520
07:00		230	635	865
08:00		245	463	708
09:00		225	332	557
10:00		231	313	544
11:00		255	303	558
12:00 PM		274	288	562
01:00		303	290	593
02:00		339	301	640
03:00		526	297	823
04:00		582	351	933
05:00		479	327	806
06:00		343	151	494
07:00		215	71	286
08:00		146	48	194
09:00		127	30	157
10:00		50	12	62
11:00		34	8	42
Total		4787	4903	9690
Percent		49.4%	50.6%	
AM Peak	-	11:00	07:00	-
Vol.	-	255	635	-
PM Peak	-	16:00	16:00	-
Vol.	-	582	351	-
Grand Total		4787	4903	9690
Percent		49.4%	50.6%	
ADT		ADT 9,690	AADT 9,690	

Site Code: 19
Station ID: 19
SHOUP RD E.O. HWY 83

Latitude: 0' 0.0000 Undefined

Start Time	30-Nov-21 Tue	EB	WB	Total
12:00 AM		7	5	12
01:00		4	0	4
02:00		2	4	6
03:00		1	6	7
04:00		3	20	23
05:00		11	59	70
06:00		38	210	248
07:00		139	508	647
08:00		196	332	528
09:00		130	232	362
10:00		153	195	348
11:00		169	183	352
12:00 PM		170	190	360
01:00		197	156	353
02:00		232	190	422
03:00		386	277	663
04:00		380	210	590
05:00		382	192	574
06:00		211	116	327
07:00		150	51	201
08:00		105	49	154
09:00		79	25	104
10:00		42	17	59
11:00		21	7	28
Total		3208	3234	6442
Percent		49.8%	50.2%	
AM Peak	-	08:00	07:00	-
Vol.	-	196	508	-
PM Peak	-	15:00	15:00	-
Vol.	-	386	277	-
Grand Total		3208	3234	6442
Percent		49.8%	50.2%	
ADT		ADT 6,442	AADT 6,442	

Site Code: 13
Station ID: 13
OLD STAGE COACH RD W.O. BLACK FOREST RD

Latitude: 0' 0.0000 Undefined

Start Time	30-Nov-21 Tue	EB	WB	Total
12:00 AM		1	0	1
01:00		0	0	0
02:00		0	0	0
03:00		0	0	0
04:00		0	0	0
05:00		0	0	0
06:00		1	4	5
07:00		4	14	18
08:00		5	15	20
09:00		7	8	15
10:00		7	4	11
11:00		5	3	8
12:00 PM		5	7	12
01:00		5	9	14
02:00		7	6	13
03:00		18	5	23
04:00		12	7	19
05:00		8	4	12
06:00		3	1	4
07:00		4	0	4
08:00		1	1	2
09:00		1	0	1
10:00		0	0	0
11:00		1	0	1
Total		95	88	183
Percent		51.9%	48.1%	
AM Peak	-	09:00	08:00	-
Vol.	-	7	15	-
PM Peak	-	15:00	13:00	-
Vol.	-	18	9	-
Grand Total		95	88	183
Percent		51.9%	48.1%	
ADT		ADT 183		AADT 183

Site Code: 16
Station ID: 16
OLD STAGE COACH RD E.O. SHORT WALL DR

Latitude: 0' 0.0000 Undefined

Start Time	30-Nov-21 Tue	EB	WB	Total
12:00 AM		0	0	0
01:00		0	0	0
02:00		0	0	0
03:00		0	0	0
04:00		1	1	2
05:00		2	0	2
06:00		8	5	13
07:00		12	23	35
08:00		9	19	28
09:00		16	14	30
10:00		13	9	22
11:00		7	11	18
12:00 PM		14	19	33
01:00		12	22	34
02:00		6	10	16
03:00		22	14	36
04:00		15	11	26
05:00		9	13	22
06:00		5	5	10
07:00		5	1	6
08:00		1	2	3
09:00		4	2	6
10:00		2	0	2
11:00		1	1	2
Total		164	182	346
Percent		47.4%	52.6%	
AM Peak	-	09:00	07:00	-
Vol.	-	16	23	-
PM Peak	-	15:00	13:00	-
Vol.	-	22	22	-
Grand Total		164	182	346
Percent		47.4%	52.6%	
ADT		ADT 346	AADT 346	

Site Code: 18
Station ID: 18
STAGECOACH RD E.O. HWY 83

Latitude: 0' 0.0000 Undefined

Start Time	30-Nov-21 Tue	EB	WB	Total
12:00 AM		0	0	0
01:00		0	0	0
02:00		1	1	2
03:00		0	0	0
04:00		0	3	3
05:00		3	4	7
06:00		12	10	22
07:00		25	30	55
08:00		31	22	53
09:00		27	31	58
10:00		17	22	39
11:00		18	23	41
12:00 PM		26	25	51
01:00		24	25	49
02:00		11	18	29
03:00		38	30	68
04:00		25	27	52
05:00		15	20	35
06:00		12	13	25
07:00		10	4	14
08:00		3	2	5
09:00		3	1	4
10:00		3	1	4
11:00		1	1	2
Total		305	313	618
Percent		49.4%	50.6%	
AM Peak	-	08:00	09:00	-
Vol.	-	31	31	-
PM Peak	-	15:00	15:00	-
Vol.	-	38	30	-
Grand Total		305	313	618
Percent		49.4%	50.6%	
ADT		ADT 618		AADT 618

						NB		EB		SB		WB
0 + Key			Phase + Key					Phase				
FUNCTION	KEY	12345678	FUNCTION	KEY	Ph 1	Ph 2	Ph 3	Ph 4	Ph 5	Ph 6	Ph 7	Ph 8
Vehicle Recall	0	2 6	Max I	0	0	55	0	35	0	55	0	35
Ped Recall	1		Max II/HFDW	1	0	55	0	35	0	55	0	35
Red Lock	2		Walk	2	0	0	0	0	0	0	0	0
Yellow Lock	3		Flashing DW	3	0	0	0	0	0	0	0	0
Permits	4	2 4 6 8	Max Initial	4	0	0	0	0	0	0	0	0
Ped Phases	5		Min Green	5	0	12	0	8	0	12	0	8
Lead Phases	6	1 3 5 7	TBR	6	0	0	0	0	0	0	0	0
Double Entry	7	4 8	TTR	7	0	0	0	0	0	0	0	0
Sequential Timing	8		Observe Gap	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Startup Green	9		Passage	9	0.0	0.2	0.0	0.2	0.0	0.2	0.0	0.2
Overlap A	A		Min Gap	A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Overlap B	B		Added Actuation	B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Overlap C	C		Yellow	C	0.0	4.0	0.0	4.0	0.0	4.0	0.0	4.0
Overlap D	D		Red Clear	D	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0
Exclusive	E		Red Revert	E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Simultaneous Gap	F	2 4 6 8	Walk II	F	0	0	0	0	0	0	0	0

9 + Key			C + F + Key		
FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE
Short Power Down	0	4	Page ID	0	0
Long Power Down	1	14	Reserved	1	0
EVA Delay Type	2	0	Reserved	2	0
EVb Delay Type	3	0	Reserved	3	0
EVC Delay Type	4	0	OLA Red	4	0.0
EVD Delay Type	5	0	OLB Red	5	0.0
RR Delay Type	6	0	OLC Red	6	0.0
Ped Inhibit	7	0	OLD Red	7	0.0
OLA Green	8	0.0			12345678
OLA Yellow	9	0.0	Overlap E	8	
OLB Green	A	0.0	Overlap F	9	
OLB Yellow	B	0.0	Red Rest	A	
OLC Green	C	0.0	Max Recall	B	
OLC Yellow	D	0.0	Flash Green	C	
OLD Green	E	0.0	Flash Walk	D	
OLD Yellow	F	0.0	Advance Walk	E	
			Restrictive Phase	F	

D + C + 9 + Key			D + C + B + Key		
FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE
Short Power Down	0	0	Page ID	0	1
Long Power Down	1	0	Reserved	1	0
EVA Delay Type	2	0	Reserved	2	0
EVB Delay Type	3	0	Reserved	3	0
EVC Delay Type	4	0	OLA Red	4	0.0
EVD Delay Type	5	0	OLB Red	5	0.0
RR Delay Type	6	0	OLC Red	6	0.0
Ped Inhibit	7	0	OLD Red	7	0.0
OLA Green	8	0.0			12345678
OLA Yellow	9	0.0	Overlap E	8	
OLB Green	A	0.0	Overlap F	9	
OLB Yellow	B	0.0	Red Rest	A	
OLC Green	C	0.0	Max Recall	B	
OLC Yellow	D	0.0	Flash Green	C	
OLD Green	E	0.0	Flash Walk	D	
OLD Yellow	F	0.0	Advance Walk	E	
			Restrictive Phase	F	

D + D + 9 + Key			D + D + B + Key		
FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE
Short Power Down	0	0	Page ID	0	2
Long Power Down	1	0	Reserved	1	0
EVA Delay Type	2	0	Reserved	2	0
EVb Delay Type	3	0	Reserved	3	0
EVC Delay Type	4	0	OLA Red	4	0.0
EVD Delay Type	5	0	OLB Red	5	0.0
RR Delay Type	6	0	OLC Red	6	0.0
Ped Inhibit	7	0	OLD Red	7	0.0
OLA Green	8	0.0			12345678
OLA Yellow	9	0.0	Overlap E	8	
OLB Green	A	0.0	Overlap F	9	
OLB Yellow	B	0.0	Red Rest	A	
OLC Green	C	0.0	Max Recall	B	
OLC Yellow	D	0.0	Flash Green	C	
OLD Green	E	0.0	Flash Walk	D	
OLD Yellow	F	0.0	Advance Walk	E	
			Restrictive Phase	F	

C + Key			E + Key		
FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE
Year	0	17	EVA Delay	0	0
Month	1	12	EVA Minimum	1	0
Day of Month	2	26	EVb Delay	2	0
		1234567	EVb Minimum	3	0
Day of Week	3	3	EVC Delay	4	0
		VALUE	EVC Minimum	5	0
Hour	4	9	EVD Delay	6	0
Minute	5	44	EVD Minimum	7	0
Second	6	50	OL Red Revert	8	0.0
Reserved	7	0	RR Delay	9	0
Triggers On In Flash	8	0	RR Clear	A	0
		12345678			12345678
Startup Yellow	9		RR Clear Phases	B	
EVA Phases	A		RR Permit	C	
EVb Phases	B		RR OL Permit	D	
EVC Phases	C		NEMA Hold Phases	E	
EVD Phases	D		Reserved	F	12 4
Handicap Ped	E				
Reserved	F				

Note: * = Set Type 3 Detector

B + 0 + Key			D + Key		
FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE
Present Plan	0	0	Floating Ped	2E	0
TOD/DOW Plan	1	0	ID Number	2F	104
Hardwire Plan	2	0	No Coord Ped Recall	3E	0
Modem Plan	3	0	Rest In Walk	3F	0
Mode (0-4)	4	0	Adv Warning EOG	4E	0
Master (0 = Off)	5	0	Adv Warning SOG	4F	0
Master Clock	6	0	RR Red Clear	5E	0
Local Clock	7	0	RR Clear Color	5F	0
Dwell Clock	8	0	Bus Delay	6D	0.0
Reserved	9	0	Bus Free T1	6E	0
Reserved	A	0	Bus Free T3	6F	0
Reserved	B	0	EV Min After Clear	7E	0
		12345678	EV Indicators	7F	0
Reserved	C		NEMA Inputs	66	0
NEMA CNA Phase	D		Reserved		0
Adv Warning Phase	E		Reserved		0
MRI Phase	F	4 8			

B + A + Key			B + B + Key			B + C + Key		
FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE
Bus P1 T1	0	0	Bus P4 T1	0	0	Bus P7 T1	0	0
Bus P1 T2	1	0	Bus P4 T2	1	0	Bus P7 T2	1	0
Bus P1 T3	2	0	Bus P4 T3	2	0	Bus P7 T3	2	0
Bus P2 T1	3	0	Bus P5 T1	3	0	Bus P8 T1	3	0
Bus P2 T2	4	0	Bus P5 T2	4	0	Bus P8 T2	4	0
Bus P2 T3	5	0	Bus P5 T3	5	0	Bus P8 T3	5	0
Bus P3 T1	6	0	Bus P6 T1	6	0	Bus P9 T1	6	0
Bus P3 T2	7	0	Bus P6 T2	7	0	Bus P9 T2	7	0
Bus P3 T3	8	0	Bus P6 T3	8	0	Bus P9 T3	8	0
Perm 2 P1	9	0	Perm 2 P4	9	0	Perm 2 P7	9	0
Perm 2 P2	A	0	Perm 2 P5	A	0	Perm 2 P8	A	0
Perm 2 P3	B	0	Perm 2 P6	B	0	Perm 2 P9	B	0
		12345678			12345678			12345678
Flash Yellow	C	2 6	OL Flash Yellow	C		Coordinated Max	C	
Flash Circuit	D	2 4 6 8	OL Flash Circuit	D		TOD Red Rest	D	
TOD/DOW Max	E		TOD/DOW Ped	E		OLA Switchpack	E	
OLB Switchpack	F		OLC Switchpack	F		OLD Switchpack	F	

A + 4 + Key			A + 5 + Key			A + 6 + Key		
C1 PIN (CODE)	KEY	VALUE	C1 PIN (CODE)	KEY	VALUE	C1 PIN (CODE)	KEY	VALUE
PH2 E&C #39(11)	0	21	PH5 E&C #55(31)	0	0	PH2 PPB #67(51)	0	0
PH6 E&C #40(12)	1	11	PH1 E&C #56(32)	1	0	PH6 PPB #68(52)	1	0
PH4 E&C #41(13)	2	23	PH7 E&C #57(33)	2	0	PH4 PPB #69(53)	2	0
PH8 E&C #42(14)	3	13	PH3 E&C #58(34)	3	0	PH8 PPB #70(54)	3	0
PH2 E&C #43(15)	4	22	PH5 E&C #59(35)	4	0	EVA #71(55)	4	0
PH6 E&C #44(16)	5	0	PH1 E&C #60(36)	5	0	EVB #72(56)	5	0
PH4 E&C #45(17)	6	24	PH7 E&C #61(37)	6	0	EVC #73(57)	6	0
PH8 E&C #46(18)	7	0	PH3 E&C #62(38)	7	0	EVD #74(58)	7	0
PH2 C #47(21)	8	12	N/U	8	0	(-) #75 (61)	8	0
PH6 C #48(22)	9	15	N/U	9	0	PH2 E. #76(62)	9	0
PH4 C #49(23)	A	14	N/U	A	0	PH6 E. #77(63)	A	0
PH8 C #50(24)	B	17	N/U	B	0	PH4 E. #78(64)	B	0
PED INH. #51(25)	C	0	PH2 E&C #63(45)	C	0	PH8 E. #79(65)	C	0
RR #52(26)	D	0	PH6 E&C #64(46)	D	0	ADV. #80(66)	D	0
ADV. EN #53(27)	E	0	PH4 E&C #65(47)	E	0	FL SENCE #81(67)	E	0
(-) #54(28)	F	0	PH8 E&C #66(48)	F	0	STOP TIME #82(68)	F	0

A + 0 + Key			A + 1 + Key			A + 2 + Key			A + 3 + Key		
FUNCTION(CODE)	KEY	VALUE	FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE
04 D/W (11)	0	23	08 D/W (31)	0	0	02 Ped Yellow(51)	0	34	01 D/W (71)	0	0
04 Walk (12)	1	25	08 Walk (32)	1	0	06 Ped Yellow(52)	1	0	01 Walk (72)	1	0
04 Red (13)	2	0	08 Red (33)	2	21	04 Ped Yellow(53)	2	24	OLB Red (73)	2	0
04 Yellow (14)	3	0	08 Yellow (34)	3	51	08 Ped Yellow(54)	3	0	OLB Yellow (74)	3	0
04 Green (15)	4	0	08 Green (35)	4	22	03 Ped Yellow(55)	4	0	OLB Green (75)	4	0
03 Red (16)	5	43	07 Red (36)	5	0	01 Ped Yellow(56)	5	0	OLA Red (76)	5	0
03 Yellow (17)	6	44	07 Yellow (37)	6	0	Flash (57)	6	0	OLA Yellow (77)	6	0
03 Green (18)	7	45	07 Green (38)	7	0	Watchdog (58)	7	0	OLA Green (78)	7	0
02 D/W (21)	8	33	06 D/W (41)	8	0	03 D/W (61)	8	0	Reserved	8	0
02 Walk (22)	9	35	06 Walk (42)	9	0	03 Walk (62)	9	0	S.D.	9	0
02 Red (23)	A	11	06 Red (43)	A	16	OLD Red (63)	A	0	LTT	A	0
02 Yellow (24)	B	53	06 Yellow (44)	B	17	OLD Yellow (64)	B	0	ID (MSB)	B	0
02 Green (25)	C	12	06 Green (45)	C	18	OLD Green (65)	C	0	Group 1	C	0
01 Red (26)	D	0	05 Red (46)	D	0	OLC Red (66)	D	0	Group 2	D	0
01 Yellow (27)	E	0	05 Yellow (47)	E	0	OLC Yellow (67)	E	0	Group 3	E	0
01 Green (28)	F	0	05 Green (48)	F	0	OLC Green (68)	F	0	Group 4	F	0

104 - Black Forest @ Shoup Road
Table 13 - Additional Overlaps
04/24/2018 4:24 PM

D + 9 + 0 + Key			D + 9 + 3 + Key			E + F + Key		
FUNCTION	KEY	12345678	FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE
Overlap H	0		OLH Green	0	0.0	RR Max II	0	0
Overlap J	1		OLH Yellow	1	0.0	Ped Perm Plan 1	1	0
Overlap K	2		OLH Red	2	0.0	Ped Perm Plan 2	2	0
Overlap L	3		OLJ Green	3	0.0	Ped Perm Plan 3	3	0
OLH Switchpack	4		OLJ Yellow	4	0.0	Ped Perm Plan 4	4	0
OLJ Switchpack	5		OLJ Red	5	0.0	Ped Perm Plan 5	5	0
OLK Switchpack	6		OLK Green	6	0.0	Ped Perm Plan 6	6	0
OLL Switchpack	7		OLK Yellow	7	0.0	Ped Perm Plan 7	7	0
Reserved	8		OLK Red	8	0.0	Ped Perm Plan 8	8	0
TimeKeeper (hc11)	9		OLL Green	9	0.0	Ped Perm Plan 9	9	0
All Red B4 EV	A		OLL Yellow	A	0.0	Long Power Outs	A	0
Reserved	B		OLL Red	B	0.0	Short Power Outs	B	0
Reserved	C		Spring DST	C	50	Failed Detectors	C	0
Reserved	D		Reserved	D		Max II On	D	0
Reserved	E		TR-3 GPS(6800)	E	0	Fall DST	E	177
Reserved	F		RTC Clock	F	0	Revision Level	F	21

CDOT

MaxTime Timing Shee

Initial Install

Administration**Unit Information**

Controller ID	0
Main St.	Hwy. 83
Side St.	Hodgen Rd.

 Cross Black_White.jpg

Adapter	IP Address	Subnet Mask	Default Gateway	ARP	DHCP
1	192.168.13.10	255.255.255.0	192.168.13.31	Disable	
2	10.20.70.51	255.255.255.0	0.0.0.0	Disable	

Serial Ports:

Port	Description	Function	Address	Baud	Bits	Stop	Parity	Flow	CTS	RTS
1	Port 2/C21S	None	1	9600	8	1	None	None	0	0
2	Aux P3/C22S	None	1	9600	8	1	None	None	0	0
3	SDLC Port 1	None	1	9600	8	1	None	None	0	0
4	Com A/C50S	None	1	9600	8	1	None	None	0	0
5	FIO	None	1	9600	8	1	None	None	0	0
6	DISPLAY/C60M	None	1	9600	8	1	None	None	0	0
7	SP7	None	1	9600	8	1	None	None	0	0
8	SP8/Com B	None	1	9600	8	1	None	None	0	0

Unit Parameters

Startup Flash	1	Auto Ped Clr	Enable	Red Revert	4.0	Backup Time	600	Ext Mode	Disable
All Red Exit	0	Grn Flash Freq.	60	Yel Flash Freq.	60	MCE Enable	Enable	Free Seq.	1
MCE Seq.	1	Start Yellow	0.0	Start Red	0.0	Start Clear Hold	6		

Phase Parameters

Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Walk Time	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clear Time	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Green	6	35	5	8	6	35	5	8	1	1	1	1	1	1	1	1	1	1	1	1
Min Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Passage	3.0	3.0	1.0	3.0	3.0	3.0	1.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max-1	12	45	0	24	12	45	0	24	0	0	0	0	0	0	0	0	0	0	0	0
Max-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yel Change	4.0	5.0	3.0	4.0	4.0	5.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	2.0	2.0	1.0	2.0	2.0	2.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Add Red Clear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Red Revert	5.0	5.0	0.0	5.0	5.0	5.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time B4 Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars B4 Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dyn Max Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dyn Max Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advance Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alt Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alt Ped Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pre Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pre Clearance	0.0	7.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phases	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Walk Time	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clear Time	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Green	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Min Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yel Change	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Add Red Clear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time B4 Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars B4 Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dyn Max Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dyn Max Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advance Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alt Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alt Ped Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pre Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pre Clearance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Options

Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Enable																				
Auto Flash Ent.																				
Auto Flash Exit																				
Non Actuated I																				
Non Actuated II																				
Non Lock Mem																				
Min Veh Recall																				
Max Veh Recall																				
Ped Recall																				
Soft Veh Recall																				
Dual Entry																				
Sim Gap Dis																				
Guaranteed Pass																				
Act Rest Walk																				
Cond Service																				
Add Initial																				

Phases	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Enable																				
Auto Flash Ent.																				
Auto Flash Exit																				
Non Actuated I																				
Non Actuated II																				
Non Lock Mem																				
Min Veh Recall																				
Max Veh Recall																				
Ped Recall																				
Soft Veh Recall																				
Dual Entry																				
Sim Gap Dis																				
Guaranteed Pass																				
Act Rest Walk																				
Cond Service																				
Add Initial																				

Additional Phase Options

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Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ped Clr During Yel																				
Ped Clr During Red																				
Cond Reservice																				
Yel Min Override																				
No Startup Call																				
Adv. Warn Flasher																				
No Ped Str Up Call																				
Ped Clr OVTG																				
Flash Exit Call																				
Flash Exit Ped Call																				
MinGreen2																				
MaxGreen2																				
MaxGreen3																				
Ped2																				
Ped Clear Pre Clear																				
Ped NA+ Mode																				
Red Rest																				
Serve Evy Oth Even																				
Serve Evy Oth Odd																				

Phases	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ped Clr During Yel																				
Ped Clr During Red																				
Cond Reservice																				
Yel Min Override																				
No Startup Call																				
Adv. Warn Flasher																				
No Ped Str Up Call																				
Ped Clr OVTG																				
Flash Exit Call																				
Flash Exit Ped Call																				
MinGreen2																				
MaxGreen2																				
MaxGreen3																				
Ped2																				
Ped Clear Pre Clear																				
Ped NA+ Mode																				
Red Rest																				
Serve Evy Oth Even																				
Serve Evy Oth Odd																				

Phase Configuration

Ph.	Startup	Ring	Concurrent	No Served Phases	Startup Min	Description
1	Phase Not On	1	5,6		0	
2	Green No Walk	1	5,6		0	
3	Phase Not On	1	7		0	
4	Phase Not On	1	7		0	
5	Phase Not On	2	1,2		0	
6	Green No Walk	2	1,2		0	
7	Phase Not On	2	3,4,8		0	
8	Phase Not On	1	7		0	
9	None	0			0	
10	None	0			0	
11	None	0			0	
12	None	0			0	
13	None	0			0	
14	None	0			0	
15	None	0			0	
16	None	0			0	
17	None	0			0	
18	None	0			0	
19	None	0			0	
20	None	0			0	

21	None	0			0	
22	None	0			0	
23	None	0			0	
24	None	0			0	
25	None	0			0	
26	None	0			0	
27	None	0			0	
28	None	0			0	
29	None	0			0	
30	None	0			0	
31	None	0			0	
32	None	0			0	
33	None	0			0	
34	None	0			0	
35	None	0			0	
36	None	0			0	
37	None	0			0	
38	None	0			0	
39	None	0			0	
40	None	0			0	

Sequence Configuration

Sequence 1

Ring	Phases
1	1,2,a,3,4,8,b
2	5,6,a,7,b
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Sequence 2

Ring	Phases
1	2,1,a,3,4,b
2	5,6,a,7,8,b
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Sequence 3

Ring	Phases
1	1,2,a,4,3,b
2	5,6,a,7,8,b
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Sequence 4

Ring	Phases
1	2,1,a,4,3,b
2	5,6,a,7,8,b
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Sequence 5

Ring	Phases
1	1,2,a,3,4,b
2	6,5,a,7,8,b
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Sequence 6

Ring	Phases
1	2,1,a,3,4,b
2	6,5,a,7,8,b
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Sequence 7

Ring	Phases
1	1,2,a,4,3,b
2	6,5,a,7,8,b
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Sequence 8

Ring	Phases
1	2,1,a,4,3,b
2	6,5,a,7,8,b
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Sequence 9

Ring	Phases
1	1,2,a,3,4,b

Sequence 10

Ring	Phases
1	2,1,a,3,4,b

Sequence 11

Ring	Phases
1	1,2,a,4,3,b

Sequence 12

Ring	Phases
1	2,1,a,4,3,b

2	5,6,a,8,7,b	2	5,6,a,8,7,b	2	5,6,a,8,7,b	2	5,6,a,8,7,b
3		3		3		3	
4		4		4		4	
5		5		5		5	
6		6		6		6	
7		7		7		7	
8		8		8		8	
9		9		9		9	
10		10		10		10	
11		11		11		11	
12		12		12		12	
13		13		13		13	
14		14		14		14	
15		15		15		15	
16		16		16		16	

Sequence 13

Ring	Phases
1	1,2,a,3,4,b
2	6,5,a,8,7,b
3	
4	
5	
6	
7	
8	
9	
10	

Sequence 14

Ring	Phases
1	2,1,a,3,4,b
2	6,5,a,8,7,b
3	
4	
5	
6	
7	
8	
9	
10	

Sequence 15

Ring	Phases
1	1,2,a,4,3,b
2	6,5,a,8,7,b
3	
4	
5	
6	
7	
8	
9	
10	

Sequence 16

Ring	Phases
1	2,1,a,4,3,b
2	6,5,a,8,7,b
3	
4	
5	
6	
7	
8	
9	
10	

Sequence 13

11	
12	
13	
14	
15	
16	

Sequence 14

11	
12	
13	
14	
15	
16	

Sequence 15

11	
12	
13	
14	
15	
16	

Sequence 16

11	
12	
13	
14	
15	
16	

Sequence 17

Ring	Phases
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Sequence 18

Ring	Phases
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Sequence 19

Ring	Phases
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Sequence 20

Ring	Phases
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Vehicle Detection Parameters

Det.	Call Phs	Call Ovl	Additional Call Phase	Switch Phase	Delay	Extend	Queue Limit	No Activity	Max Presence	Erratic Counts	Failed Time	Description
1	1	0		0	0.0	0.0	0	0	0	0	0	
2	2	0		0	0.0	0.0	0	0	0	0	0	
3	2	0		0	0.0	0.0	0	0	0	0	0	
4	2	0		0	0.0	0.0	0	0	0	0	0	

5	2	0		0	0.0	0.0	0	0	0	0	0	
6	2	0		0	0.0	0.0	0	0	0	0	0	
7	3	0		0	0.0	0.0	0	0	0	0	0	
8	4	0		0	0.0	0.0	0	0	0	0	0	
9	4	0		0	0.0	0.0	0	0	0	0	0	
10	4	0		0	0.0	0.0	0	0	0	0	0	
11	4	0		0	0.0	0.0	0	0	0	0	0	
12	4	0		0	0.0	0.0	0	0	0	0	0	
13	1	0		0	0.0	0.0	0	0	0	0	0	
14	3	0		0	0.0	0.0	0	0	0	0	0	
15	5	0		0	0.0	0.0	0	0	0	0	0	
16	6	0		0	0.0	0.0	0	0	0	0	0	
17	6	0		0	0.0	0.0	0	0	0	0	0	
18	6	0		0	0.0	0.0	0	0	0	0	0	
19	6	0		0	0.0	0.0	0	0	0	0	0	
20	6	0		0	0.0	0.0	0	0	0	0	0	
21	7	0		0	0.0	0.0	0	0	0	0	0	
22	8	0		0	0.0	0.0	0	0	0	0	0	
23	8	0		0	0.0	0.0	0	0	0	0	0	
24	8	0		0	0.0	0.0	0	0	0	0	0	
25	8	0		0	0.0	0.0	0	0	0	0	0	
26	8	0		0	0.0	0.0	0	0	0	0	0	
27	5	0		0	0.0	0.0	0	0	0	0	0	
28	7	0		0	0.0	0.0	0	0	0	0	0	
29	0	0		0	0.0	0.0	0	0	0	0	0	
30	0	0		0	0.0	0.0	0	0	0	0	0	
31	0	0		0	0.0	0.0	0	0	0	0	0	
32	0	0		0	0.0	0.0	0	0	0	0	0	
33	0	0		0	0.0	0.0	0	0	0	0	0	
34	0	0		0	0.0	0.0	0	0	0	0	0	
35	0	0		0	0.0	0.0	0	0	0	0	0	
36	0	0		0	0.0	0.0	0	0	0	0	0	
37	0	0		0	0.0	0.0	0	0	0	0	0	
38	0	0		0	0.0	0.0	0	0	0	0	0	
39	0	0		0	0.0	0.0	0	0	0	0	0	
40	0	0		0	0.0	0.0	0	0	0	0	0	
41	0	0		0	0.0	0.0	0	0	0	0	0	
42	0	0		0	0.0	0.0	0	0	0	0	0	
43	0	0		0	0.0	0.0	0	0	0	0	0	
44	0	0		0	0.0	0.0	0	0	0	0	0	
45	0	0		0	0.0	0.0	0	0	0	0	0	
46	0	0		0	0.0	0.0	0	0	0	0	0	
47	0	0		0	0.0	0.0	0	0	0	0	0	
48	0	0		0	0.0	0.0	0	0	0	0	0	
49	0	0		0	0.0	0.0	0	0	0	0	0	
50	0	0		0	0.0	0.0	0	0	0	0	0	
51	0	0		0	0.0	0.0	0	0	0	0	0	
52	0	0		0	0.0	0.0	0	0	0	0	0	
53	0	0		0	0.0	0.0	0	0	0	0	0	
54	0	0		0	0.0	0.0	0	0	0	0	0	
55	0	0		0	0.0	0.0	0	0	0	0	0	
56	0	0		0	0.0	0.0	0	0	0	0	0	
57	0	0		0	0.0	0.0	0	0	0	0	0	
58	0	0		0	0.0	0.0	0	0	0	0	0	
59	0	0		0	0.0	0.0	0	0	0	0	0	
60	0	0		0	0.0	0.0	0	0	0	0	0	
61	0	0		0	0.0	0.0	0	0	0	0	0	
62	0	0		0	0.0	0.0	0	0	0	0	0	
63	0	0		0	0.0	0.0	0	0	0	0	0	
64	0	0		0	0.0	0.0	0	0	0	0	0	
65	0	0		0	0.0	0.0	0	0	0	0	0	
66	0	0		0	0.0	0.0	0	0	0	0	0	
67	0	0		0	0.0	0.0	0	0	0	0	0	
68	0	0		0	0.0	0.0	0	0	0	0	0	

69	0	0		0	0.0	0.0	0	0	0	0	0	
70	0	0		0	0.0	0.0	0	0	0	0	0	
71	0	0		0	0.0	0.0	0	0	0	0	0	
72	0	0		0	0.0	0.0	0	0	0	0	0	

Vehicle Detection Options

Detector	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Volume Detector																				
Occupancy																				
Yellow Lock Call																				
Red Lock call																				
Passage																				
Queue																				
Call																				
Terminate																				

Detector	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Volume Detector																				
Occupancy																				
Yellow Lock Call																				
Red Lock call																				
Passage																				
Queue																				
Call																				
Terminate																				

Detector	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Volume Detector																				
Occupancy																				
Yellow Lock Call																				
Red Lock call																				
Passage																				
Queue																				
Call																				
Terminate																				

Detector	61	62	63	64	65	66	67	68	69	70	71	72
Volume Detector												
Occupancy												
Yellow Lock Call												
Red Lock call												
Passage												
Queue												
Call												
Terminate												

Data Collection Period 0

Pedestrian Detectors

Det	Call Phase	Call Ovp	No Act	Max Presence	Erratic Count
1	0	0	0	0	0
2	2	0	0	0	0
3	0	0	0	0	0
4	4	0	0	0	0
5	0	0	0	0	0
6	6	0	0	0	0
7	0	0	0	0	0
8	8	0	0	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0	0
12	0	0	0	0	0
13	0	0	0	0	0
14	0	0	0	0	0

Det	Call Phase	Call Ovp	No Act	Max Presence	Erratic Count
21	0	0	0	0	0
22	0	0	0	0	0
23	0	0	0	0	0
24	0	0	0	0	0
25	0	0	0	0	0
26	0	0	0	0	0
27	0	0	0	0	0
28	0	0	0	0	0
29	0	0	0	0	0
30	0	0	0	0	0
31	0	0	0	0	0
32	0	0	0	0	0
33	0	0	0	0	0
34	0	0	0	0	0

15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	0

35	0	0	0	0	0
36	0	0	0	0	0
37	0	0	0	0	0
38	0	0	0	0	0
39	0	0	0	0	0
40	0	0	0	0	0

Overlaps

OLP	Type	Included Phases	Modifier Phases	Trail	Trail	Trail	Walk	Ped	Walk	Ped	Delay	Flash	Descriptions
				GRN	YEL	RED	1	Clr 1	2	Clr 2			
1	FYA - 4 Sec	2	1	0	0.0	0.0	0	0	0	0	0.0	On	
2	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
3	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
4	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
5	FYA - 4 Sec	6	5	0	0.0	0.0	0	0	0	0	0.0	On	
6	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
7	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
8	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
9	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
10	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
11	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
12	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
13	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
14	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
15	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
16	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
17	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
18	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
19	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
20	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
21	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
22	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
23	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
24	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
25	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
26	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
27	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
28	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
29	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
30	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
31	Off			0	0.0	0.0	0	0	0	0	0.0	Off	
32	Off			0	0.0	0.0	0	0	0	0	0.0	Off	

Coordination Parameters

Operational Mode	Correction Mode	Maximum Mode	Force Mode
Manual Free	Shortway (Auto)	Per Pattern	Per Pattern

Patterns

Patt.	Cycle	Offset 1	Offset 2	Offset 2	Split	Sequence	Ref. Color	Max Mode	Phs Pln	Det Pln	Ped Pln
1	0	0	0	0	0	0	Yel	Inh	1	1	1
2	0	0	0	0	0	0	Yel	Inh	1	1	1
3	0	0	0	0	0	0	Yel	Inh	1	1	1
4	0	0	0	0	0	0	Yel	Inh	1	1	1
5	0	0	0	0	0	0	Yel	Inh	1	1	1
6	0	0	0	0	0	0	Yel	Inh	1	1	1
7	0	0	0	0	0	0	Yel	Inh	1	1	1
8	0	0	0	0	0	0	Yel	Inh	1	1	1
9	0	0	0	0	0	0	Yel	Inh	1	1	1
10	0	0	0	0	0	0	Yel	Inh	1	1	1
11	0	0	0	0	0	0	Yel	Inh	1	1	1
12	0	0	0	0	0	0	Yel	Inh	1	1	1
13	0	0	0	0	0	0	Yel	Inh	1	1	1
14	0	0	0	0	0	0	Yel	Inh	1	1	1
15	0	0	0	0	0	0	Yel	Inh	1	1	1
16	0	0	0	0	0	0	Yel	Inh	1	1	1

17	0	0	0	0	0	0	Yel	Inh	1	1	1
18	0	0	0	0	0	0	Yel	Inh	1	1	1
19	0	0	0	0	0	0	Yel	Inh	1	1	1
20	0	0	0	0	0	0	Yel	Inh	1	1	1
21	0	0	0	0	0	0	Yel	Inh	1	1	1
22	0	0	0	0	0	0	Yel	Inh	1	1	1
23	0	0	0	0	0	0	Yel	Inh	1	1	1
24	0	0	0	0	0	0	Yel	Inh	1	1	1
25	0	0	0	0	0	0	Yel	Inh	1	1	1
26	0	0	0	0	0	0	Yel	Inh	1	1	1
27	0	0	0	0	0	0	Yel	Inh	1	1	1
28	0	0	0	0	0	0	Yel	Inh	1	1	1
29	0	0	0	0	0	0	Yel	Inh	1	1	1
30	0	0	0	0	0	0	Yel	Inh	1	1	1
31	0	0	0	0	0	0	Yel	Inh	1	1	1
32	0	0	0	0	0	0	Yel	Inh	1	1	1
33	0	0	0	0	0	0	Yel	Inh	1	1	1
34	0	0	0	0	0	0	Yel	Inh	1	1	1
35	0	0	0	0	0	0	Yel	Inh	1	1	1
36	0	0	0	0	0	0	Yel	Inh	1	1	1
37	0	0	0	0	0	0	Yel	Inh	1	1	1
38	0	0	0	0	0	0	Yel	Inh	1	1	1
39	0	0	0	0	0	0	Yel	Inh	1	1	1
40	0	0	0	0	0	0	Yel	Inh	1	1	1
41	0	0	0	0	0	0	Yel	Inh	1	1	1
42	0	0	0	0	0	0	Yel	Inh	1	1	1
43	0	0	0	0	0	0	Yel	Inh	1	1	1
44	0	0	0	0	0	0	Yel	Inh	1	1	1
45	0	0	0	0	0	0	Yel	Inh	1	1	1
46	0	0	0	0	0	0	Yel	Inh	1	1	1
47	0	0	0	0	0	0	Yel	Inh	1	1	1
48	0	0	0	0	0	0	Yel	Inh	1	1	1
49	0	0	0	0	0	0	Yel	Inh	1	1	1
50	0	0	0	0	0	0	Yel	Inh	1	1	1
51	0	0	0	0	0	0	Yel	Inh	1	1	1
52	0	0	0	0	0	0	Yel	Inh	1	1	1
53	0	0	0	0	0	0	Yel	Inh	1	1	1
54	0	0	0	0	0	0	Yel	Inh	1	1	1
55	0	0	0	0	0	0	Yel	Inh	1	1	1
56	0	0	0	0	0	0	Yel	Inh	1	1	1
57	0	0	0	0	0	0	Yel	Inh	1	1	1
58	0	0	0	0	0	0	Yel	Inh	1	1	1
59	0	0	0	0	0	0	Yel	Inh	1	1	1
60	0	0	0	0	0	0	Yel	Inh	1	1	1
61	0	0	0	0	0	0	Yel	Inh	1	1	1
62	0	0	0	0	0	0	Yel	Inh	1	1	1
63	0	0	0	0	0	0	Yel	Inh	1	1	1
64	0	0	0	0	0	0	Yel	Inh	1	1	1
65	0	0	0	0	0	0	Yel	Inh	1	1	1
66	0	0	0	0	0	0	Yel	Inh	1	1	1
67	0	0	0	0	0	0	Yel	Inh	1	1	1
68	0	0	0	0	0	0	Yel	Inh	1	1	1
69	0	0	0	0	0	0	Yel	Inh	1	1	1
70	0	0	0	0	0	0	Yel	Inh	1	1	1
71	0	0	0	0	0	0	Yel	Inh	1	1	1
72	0	0	0	0	0	0	Yel	Inh	1	1	1
73	0	0	0	0	0	0	Yel	Inh	1	1	1
74	0	0	0	0	0	0	Yel	Inh	1	1	1
75	0	0	0	0	0	0	Yel	Inh	1	1	1
76	0	0	0	0	0	0	Yel	Inh	1	1	1
77	0	0	0	0	0	0	Yel	Inh	1	1	1
78	0	0	0	0	0	0	Yel	Inh	1	1	1
79	0	0	0	0	0	0	Yel	Inh	1	1	1

80	0	0	0	0	0	0	Yel	Inh	1	1	1
81	0	0	0	0	0	0	Yel	Inh	1	1	1
82	0	0	0	0	0	0	Yel	Inh	1	1	1
83	0	0	0	0	0	0	Yel	Inh	1	1	1
84	0	0	0	0	0	0	Yel	Inh	1	1	1
85	0	0	0	0	0	0	Yel	Inh	1	1	1
86	0	0	0	0	0	0	Yel	Inh	1	1	1
87	0	0	0	0	0	0	Yel	Inh	1	1	1
88	0	0	0	0	0	0	Yel	Inh	1	1	1
89	0	0	0	0	0	0	Yel	Inh	1	1	1
90	0	0	0	0	0	0	Yel	Inh	1	1	1
91	0	0	0	0	0	0	Yel	Inh	1	1	1
92	0	0	0	0	0	0	Yel	Inh	1	1	1
93	0	0	0	0	0	0	Yel	Inh	1	1	1
94	0	0	0	0	0	0	Yel	Inh	1	1	1
95	0	0	0	0	0	0	Yel	Inh	1	1	1
96	0	0	0	0	0	0	Yel	Inh	1	1	1
97	0	0	0	0	0	0	Yel	Inh	1	1	1
98	0	0	0	0	0	0	Yel	Inh	1	1	1
99	0	0	0	0	0	0	Yel	Inh	1	1	1
100	0	0	0	0	0	0	Yel	Inh	1	1	1
101	0	0	0	0	0	0	Yel	Inh	1	1	1
102	0	0	0	0	0	0	Yel	Inh	1	1	1
103	0	0	0	0	0	0	Yel	Inh	1	1	1
104	0	0	0	0	0	0	Yel	Inh	1	1	1
105	0	0	0	0	0	0	Yel	Inh	1	1	1
106	0	0	0	0	0	0	Yel	Inh	1	1	1
107	0	0	0	0	0	0	Yel	Inh	1	1	1
108	0	0	0	0	0	0	Yel	Inh	1	1	1
109	0	0	0	0	0	0	Yel	Inh	1	1	1
110	0	0	0	0	0	0	Yel	Inh	1	1	1
111	0	0	0	0	0	0	Yel	Inh	1	1	1
112	0	0	0	0	0	0	Yel	Inh	1	1	1
113	0	0	0	0	0	0	Yel	Inh	1	1	1
114	0	0	0	0	0	0	Yel	Inh	1	1	1
115	0	0	0	0	0	0	Yel	Inh	1	1	1
116	0	0	0	0	0	0	Yel	Inh	1	1	1
117	0	0	0	0	0	0	Yel	Inh	1	1	1
118	0	0	0	0	0	0	Yel	Inh	1	1	1
119	0	0	0	0	0	0	Yel	Inh	1	1	1
120	0	0	0	0	0	0	Yel	Inh	1	1	1
121	0	0	0	0	0	0	Yel	Inh	1	1	1
122	0	0	0	0	0	0	Yel	Inh	1	1	1
123	0	0	0	0	0	0	Yel	Inh	1	1	1
124	0	0	0	0	0	0	Yel	Inh	1	1	1
125	0	0	0	0	0	0	Yel	Inh	1	1	1
126	0	0	0	0	0	0	Yel	Inh	1	1	1
127	0	0	0	0	0	0	Yel	Inh	1	1	1
128	0	0	0	0	0	0	Yel	Inh	1	1	1

Split Parameters

Split 1		Coord	Ref	
PH.	Time	PH	PH	Mode
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None

Split 2		Coord	Ref	
PH.	Time	PH	PH	Mode
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None

12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 3		Coord	Ref	Mode
PH.	Time	PH	PH	
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 4		Coord	Ref	Mode
PH.	Time	PH	PH	
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 5		Coord	Ref	Mode
PH.	Time	PH	PH	
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 6		Coord	Ref	Mode
PH.	Time	PH	PH	
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 7		Coord	Ref	Mode
PH.	Time	PH	PH	
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 8		Coord	Ref	Mode
PH.	Time	PH	PH	
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 9

Split 10

PH.	Time	Coord PH	Ref PH	Mode
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None

PH.	Time	Coord PH	Ref PH	Mode
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None

Split 9		Coord PH	Ref PH	Mode
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 10		Coord PH	Ref PH	Mode
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 11		Coord PH	Ref PH	Mode
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 12		Coord PH	Ref PH	Mode
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 13		Coord PH	Ref PH	Mode
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 14		Coord PH	Ref PH	Mode
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 15		Coord PH	Ref PH	Mode
1	0			None
2	0			None

Split 16		Coord PH	Ref PH	Mode
1	0			None
2	0			None

3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 17		Coord	Ref	Mode
PH.	Time	PH	PH	
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 18		Coord	Ref	Mode
PH.	Time	PH	PH	
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 19		Coord	Ref	Mode
PH.	Time	PH	PH	
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None

Split 20		Coord	Ref	Mode
PH.	Time	PH	PH	
1	0			None
2	0			None
3	0			None
4	0			None
5	0			None
6	0			None

Split 19		Coord	Ref	Mode
PH.	Time	PH	PH	
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Split 20		Coord	Ref	Mode
PH.	Time	PH	PH	
7	0			None
8	0			None
9	0			None
10	0			None
11	0			None
12	0			None
13	0			None
14	0			None
15	0			None
16	0			None

Ring	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Offset																

Day Plan		1														
Month of Year		Days of Week					Days of Month									
J	F	M	A	M	J	S	M	T	W	T	F	S	1	2	3	4
													5	6	7	8
													9	10	11	12
													13	14	15	16

[illegible]

J	A	S	O	N	D	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Day Plan					11																													
Month of Year					Days of Week							Days of Month																						
J	F	M	A	M	J	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16						
J	A	S	O	N	D								17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							

Day Plan					12																													
Month of Year						Days of Week							Days of Month																					
J	F	M	A	M	J	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16						
J	A	S	O	N	D								17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							

Day Plan					13																									
Month of Year					Days of Week							Days of Month																		
J	F	M	A	M	J	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
J	A	S	O	N	D								17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			

Day Plan					14																									
Month of Year					Days of Week							Days of Month																		
J	F	M	A	M	J	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
J	A	S	O	N	D								17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			

Day Plan					15																									
Month of Year					Days of Week							Days of Month																		
J	F	M	A	M	J	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
J	A	S	O	N	D								17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			

Day Plan 1				Day Plan 2				Day Plan 3				Day Plan 4			
Event	Hour	Min.	Act	Event	Hour	Min.	Act	Event	Hour	Min.	Act	Event	Hour	Min.	Act
1	5	0	1	1	0	0		1	0	0		1	0	0	
2	23	0	2	2	0	0		2	0	0		2	0	0	
3	0	0		3	0	0		3	0	0		3	0	0	
4	0	0		4	0	0		4	0	0		4	0	0	
5	0	0		5	0	0		5	0	0		5	0	0	

Day Plan 1				Day Plan 2				Day Plan 3				Day Plan 4			
Event	Hour	Min.	Act	Event	Hour	Min.	Act	Event	Hour	Min.	Act	Event	Hour	Min.	Act
6	0	0		6	0	0		6	0	0		6	0	0	
7	0	0		7	0	0		7	0	0		7	0	0	
8	0	0		8	0	0		8	0	0		8	0	0	
9	0	0		9	0	0		9	0	0		9	0	0	
10	0	0		10	0	0		10	0	0		10	0	0	

Day Plan 5				Day Plan 6				Day Plan 7				Day Plan 8			
Event	Hour	Min.	Act	Event	Hour	Min.	Act	Event	Hour	Min.	Act	Event	Hour	Min.	Act
1	0	0		1	0	0		1	0	0		1	0	0	
2	0	0		2	0	0		2	0	0		2	0	0	
3	0	0		3	0	0		3	0	0		3	0	0	
4	0	0		4	0	0		4	0	0		4	0	0	
5	0	0		5	0	0		5	0	0		5	0	0	
6	0	0		6	0	0		6	0	0		6	0	0	

7	0	0		7	0	0		7	0	0		7	0	0	
8	0	0		8	0	0		8	0	0		8	0	0	
9	0	0		9	0	0		9	0	0		9	0	0	
10	0	0		10	0	0		10	0	0		10	0	0	
Day Plan			9	Day Plan			10	Day Plan			11	Day Plan			12
Event	Hour	Min.	Act	Event	Hour	Min.	Act	Event	Hour	Min.	Act	Event	Hour	Min.	Act
1	0	0		1	0	0		1	0	0		1	0	0	
2	0	0		2	0	0		2	0	0		2	0	0	
3	0	0		3	0	0		3	0	0		3	0	0	
4	0	0		4	0	0		4	0	0		4	0	0	
5	0	0		5	0	0		5	0	0		5	0	0	
6	0	0		6	0	0		6	0	0		6	0	0	
7	0	0		7	0	0		7	0	0		7	0	0	
8	0	0		8	0	0		8	0	0		8	0	0	
9	0	0		9	0	0		9	0	0		9	0	0	
10	0	0		10	0	0		10	0	0		10	0	0	
Day Plan			13	Day Plan			14	Day Plan			15	Day Plan			16
Event	Hour	Min.	Act	Event	Hour	Min.	Act	Event	Hour	Min.	Act	Event	Hour	Min.	Act
1	0	0		1	0	0		1	0	0		1	0	0	
2	0	0		2	0	0		2	0	0		2	0	0	
3	0	0		3	0	0		3	0	0		3	0	0	
4	0	0		4	0	0		4	0	0		4	0	0	
5	0	0		5	0	0		5	0	0		5	0	0	
6	0	0		6	0	0		6	0	0		6	0	0	
7	0	0		7	0	0		7	0	0		7	0	0	
8	0	0		8	0	0		8	0	0		8	0	0	
9	0	0		9	0	0		9	0	0		9	0	0	
10	0	0		10	0	0		10	0	0		10	0	0	
Day Plan			17	Day Plan			18	Day Plan			19	Day Plan			20
Event	Hour	Min.	Act	Event	Hour	Min.	Act	Event	Hour	Min.	Act	Event	Hour	Min.	Act
1	0	0		1	0	0		1	0	0		1	0	0	
2	0	0		2	0	0		2	0	0		2	0	0	
3	0	0		3	0	0		3	0	0		3	0	0	
4	0	0		4	0	0		4	0	0		4	0	0	
5	0	0		5	0	0		5	0	0		5	0	0	
6	0	0		6	0	0		6	0	0		6	0	0	
7	0	0		7	0	0		7	0	0		7	0	0	
8	0	0		8	0	0		8	0	0		8	0	0	
9	0	0		9	0	0		9	0	0		9	0	0	
10	0	0		10	0	0		10	0	0		10	0	0	

Actions		Aux.			Special Functions							
Act	Pattern	1	2	3	1	2	3	4	5	6	7	8
1	Free											
2	Flash											
3	Pattern 3											
4	Pattern 4											
5	Pattern 5											
6	Pattern 6											
7	Pattern 7											
8	Pattern 8											
9	Pattern 9											
10	Pattern 10											
11	None											
12	None											
13	None											
14	None											
15	None											
16	None											
17	None											
18	None											
19	None											

Actions		Aux.			Special Functions							
Act	Pattern	1	2	3	1	2	3	4	5	6	7	8
33	None											
34	None											
35	None											
36	None											
37	None											
38	None											
39	None											
40	None											
41	None											
42	None											
43	None											
44	None											
45	None											
46	None											
47	None											
48	None											
49	None											
50	None											
51	None											

20	None								
21	None								
22	None								
23	None								
24	None								
25	None								
26	None								
27	None								
28	None								
29	None								
30	None								
31	None								
32	None								

52	None								
53	None								
54	None								
55	None								
56	None								
57	None								
58	None								
59	None								
60	None								
61	None								
62	None								
63	None								
64	None								

Preemption Parameters

Preempt	1	2	3	4	5	6	7	8
Link	0	0	0	0	0	0	0	0
Delay	0	0	0	0	0	0	0	0
Min Duration	0	0	0	0	0	0	0	0
Min Green	0	0	0	0	0	0	0	0
Min Walk	0	0	0	0	0	0	0	0
Ent. Ped Clear	255	255	255	255	255	255	255	255
Track Green	0	0	0	0	0	0	0	0
Dwell Green	0	0	0	0	0	0	0	0
Max Presence	0	0	0	0	0	0	0	0
Enter Yellow	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Ent. Red Clear	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5

Preemption Parameters

Preempt	1	2	3	4	5	6	7	8
Track Yellow	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Track Red Clear	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Exit Red	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Exit Ped Clear	255	255	255	255	255	255	255	255
Exit Yellow	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Exit Red	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Preempt	1	2	3	4	5	6	7	8
Non Lock Mem								
Not Override Flash								
NotOverrideNextPre								
Flash Dwell								

Preemption Configuration

Preempt	1	2	3	4	5	6	7	8
Track phase								
Dwell Phase								
Dwell Ped								
Exit Phase								
Track Overlap								
Dwell overlap								
Cycling phase								
Cycling Ped								
Cycling Overlap								

IO Modules

IO Mod	TYPE
1	Caltrans 332
2	None
3	None
4	None
5	None
6	None
7	None
8	None
9	None
10	None

Channel Configuration

Chan	Ctrl Type	Source
1	Olp	1
2	Phs Veh	2
3	Phs Veh	3
4	Phs Veh	4
5	Olp	5
6	Phs Veh	6
7	Phs Veh	7
8	Phs Veh	8
9	Phs Veh	1
10	Wrn Flash	2

Chan	Ctrl Type	Source
11	Phs Veh	5
12	Wrn Flash	6
13	Phs Ped	2
14	Phs Ped	4
15	Phs Ped	6
16	Phs Ped	8
17	Olp	5
18	Olp	6
19	None	0
20	None	0

Channel Options

Channel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Flash Yellow																
Flash Red																
Alt Flash																
Channel	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Flash Yellow																
Flash Red																
Alt Flash																

Startup Clearance Hold Type

1=off, 2=On, 3=Flash and 4= Alt Flash

Channel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Red																
Yellow																
Green																
Channel	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Red																
Yellow																
Green																

Phase Intervals

Interval	Description	Red	Yel	Grn	Type
1	notActive	On	Off	Off	Red
2	dltGrn	On	Off	Off	Red
3	PreGrn	Off	Off	On	Green
4	minGrn	Off	Off	On	Green
5	grnExt	Off	Off	On	Green
6	grnDwell	Off	Off	On	Green
7	preClear	Off	Off	On	Green
8	yelChange	Off	On	Off	Yellow
9	redClear	On	Off	Off	Red
10	redDwell	On	Off	Off	Red
11	Barrier	On	Off	Off	Red
12					

Pedestrian Intervals

Interval	Description	DWK	CLR	Wlk	Type
1	notActive	On	Off	Off	Dont Walk
2	dltPed	On	Off	Off	Dont Walk
3	walk	Off	Off	On	Walk
4	walkDwell	Off	Off	On	Walk
5	flashDtWlk	Flash	On	Off	Ped Clear
6	dWalk	On	Off	Off	Dont Walk
7					
8					

Countdown Display

Display	Addr	Phase	Time	Display	Addr	Phase	Time	Display	Addr	Phase	Time	Display	Addr	Phase	Time
1				9				17				25			
2				10				18				26			
3				11				19				27			
4				12				20				28			
5				13				21				29			
6				14				22				30			
7				15				23				31			
8				16				24				32			

Manual Control Phase Groups

Grp 1	Grp 2	Grp 3	Grp 4	Grp 5	Grp 6	Grp 7	Grp 8
Ring	Ph	Ring	Ph	Ring	Ph	Ring	Ph
1	0	1	0	1	0	1	0
2	0	2	0	2	0	2	0
3	0	3	0	3	0	3	0
4	0	4	0	4	0	4	0
5	0	5	0	5	0	5	0
6	0	6	0	6	0	6	0
7	0	7	0	7	0	7	0
8	0	8	0	8	0	8	0
9	0	9	0	9	0	9	0
10	0	10	0	10	0	10	0
11	0	11	0	11	0	11	0
12	0	12	0	12	0	12	0
13	0	13	0	13	0	13	0
14	0	14	0	14	0	14	0
15	0	15	0	15	0	15	0
16	0	16	0	16	0	16	0

Prioritor Settings

Prioritor	Priority Ph	Output Dly
1		0
2		0
3		0
4		0

Enabled	Lock Out Time
No	0

Intersection 542 at Highway 83 and Shoup Rd - Timing table, page 1

Page 1	Phases											
	1	2	3	4	5	6	7	8	9	10	11	12
Min Green	4	20	0	0	0	20	0	4	0	0	0	0
Passage Time I	1.0	1.0	0.0	0.0	0.0	1.0	0.0	3.0	0.0	0.0	0.0	0.0
Passage Time II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Green I	20	45	0	0	0	45	0	30	0	0	0	0
Max Green II	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	3.0	5.5	0.0	0.0	0.0	5.5	0.0	4.0	0.0	0.0	0.0	0.0
Red Clearance	2.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0
Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Added Initial	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0
Min Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Green Time	0	0	0	0	0	0	0	0	0	0	0	0
Red Revert Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Time	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance	0	0	0	0	0	0	0	0	0	0	0	0
Handicap Walk	0	0	0	0	0	0	0	0	0	0	0	0
Handicap Ped Clearance	0	0	0	0	0	0	0	0	0	0	0	0
Highway 83	X	X				X						
Shoup Rd								X				
Compass Direction	S	N				S		W				
Through, Turn or XPed	Left,p/p	Thru				Thru		Thru				

Intersection 542 at Highway 83 and Shoup Rd - Sequence table, page 1

Page 1	Ring 1 Phases				Ring 2 Phases				Ring 3 Phases			
	1	2	3	4	5	6	7	8	9	10	11	12
State 1	Vehicle											
Barrier 1												
State 2		Vehicle				Vehicle						
Barrier 2	XXXXXXXXXXXXXXXXXXXX				XXXXXXXXXXXXXXXXXXXX							
State 3								Vehicle				
Barrier 3	XXXXXXXXXXXXXXXXXXXX				XXXXXXXXXXXXXXXXXXXX							
State 4												
Barrier 4												
State 5												
Barrier 5												
State 6												
Barrier 6												
State 7												
Barrier 7												
State 8												
Barrier 8												
State 9												
Barrier 9												
State 10												
Barrier 10												
State 11												
Barrier 11												
State 12												
Barrier 12												

Intersection 598 at Highway 83 and North Gate Blvd. - Timing table, page 1

Page 1	Phases											
	1	2	3	4	5	6	7	8	9	10	11	12
Min Green	0	23	0	6	6	23	0	6	0	0	0	0
Passage Time I	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0
Passage Time II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Green I	0	60	0	24	25	60	0	24	0	0	0	0
Max Green II	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	0.0	5.0	0.0	4.0	3.0	5.0	0.0	4.0	0.0	0.0	0.0	0.0
Red Clearance	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0
Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Added Initial	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0
Min Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Green Time	0	0	0	0	0	0	0	0	0	0	0	0
Red Revert Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Time	0	0	0	7	0	7	0	0	0	0	0	0
Pedestrian Clearance	0	0	0	37	0	33	0	0	0	0	0	0
Handicap Walk	0	0	0	0	0	0	0	0	0	0	0	0
Handicap Ped Clearance	0	0	0	0	0	0	0	0	0	0	0	0
Highway 83		X			X	X						
North Gate Blvd.				X				X				
Compass Direction		N		E	N	S		W				
Through, Turn or XPed		Thru		Thru	Left,prt	Thru		Thru				

Intersection 598 at Highway 83 and North Gate Blvd. - Sequence table, page 1

Page 1	Ring 1 Phases				Ring 2 Phases				Ring 3 Phases			
	1	2	3	4	5	6	7	8	9	10	11	12
State 1					Vehicle							
Barrier 1												
State 2		Vehicle				V & P						
Barrier 2	XXXXXXXXXXXXXXXXXXXX				XXXXXXXXXXXXXXXXXXXX							
State 3				V & P				Vehicle				
Barrier 3	XXXXXXXXXXXXXXXXXXXX				XXXXXXXXXXXXXXXXXXXX							
State 4												
Barrier 4												
State 5												
Barrier 5												
State 6												
Barrier 6												
State 7												
Barrier 7												
State 8												
Barrier 8												
State 9												
Barrier 9												
State 10												
Barrier 10												
State 11												
Barrier 11												
State 12												
Barrier 12												

APPENDIX B

Level of Service Definitions

The following information can be found in the Highway Capacity Manual, Transportation Research Board, 2016:
Chapter 19 – Signalized Intersections and Chapter 20 – Two-Way Stop Controlled Intersections.

Automobile Level of Service (LOS) for Signalized Intersections

Levels of service are defined to represent reasonable ranges in control delay.

LOS A

Describes operations with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B

Describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C

Describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D

Describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E

Describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F

Describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Level of Service (LOS) for Unsignalized TWSC Intersections

Level of Service ($v/c \leq 1.0$)	Average Control Delay (s/veh)
A	0 - 10
B	> 10 - 15
C	> 15 - 25
D	> 25 - 35
E	> 35 - 50
F	> 50

APPENDIX C

Capacity Worksheets























Unsignalized LOS worksheets indicate that HCM defaults were used for PHF, %HV, and other factors. Since traffic count data are available, consider using these data for existing conditions per ECM. Also, evaluate whether HCM defaults are adequate for future scenarios based on existing conditions data.

Timings

7: Black Forest Road & Hodgen Road

Background Traffic Conditions

Year 2042 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	258	112	110	793	20	179	0	56	20	0	76
Future Volume (vph)	22	258	112	110	793	20	179	0	56	20	0	76
Satd. Flow (prot)	1770	1863	1583	1770	1855	0	1770	1583	0	1770	1583	0
Flt Permitted	0.109			0.541			0.703			0.717		
Satd. Flow (perm)	203	1863	1583	1008	1855	0	1310	1583	0	1336	1583	0
Satd. Flow (RTOR)			122		2			607			220	
Lane Group Flow (vph)	24	280	122	120	884	0	195	61	0	22	83	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	11.0	18.0	18.0	11.0	18.0		14.0	14.0		14.0	14.0	
Total Split (s)	11.0	54.0	54.0	11.0	54.0		25.0	25.0		25.0	25.0	
Total Split (%)	12.2%	60.0%	60.0%	12.2%	60.0%		27.8%	27.8%		27.8%	27.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Act Effect Green (s)	37.9	34.0	34.0	40.6	39.0		15.5	15.5		15.5	15.5	
Actuated g/C Ratio	0.54	0.48	0.48	0.57	0.55		0.22	0.22		0.22	0.22	
v/c Ratio	0.11	0.31	0.15	0.19	0.86		0.68	0.07		0.08	0.16	
Control Delay	6.8	13.1	2.7	6.9	26.0		42.4	0.2		27.8	0.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	6.8	13.1	2.7	6.9	26.0		42.4	0.2		27.8	0.7	
LOS	A	B	A	A	C		D	A		C	A	
Approach Delay		9.7			23.8			32.4			6.3	
Approach LOS		A			C			C			A	
Queue Length 50th (ft)	4	78	0	21	269		75	0		7	0	
Queue Length 95th (ft)	12	131	24	42	#694		#200	0		30	0	
Internal Link Dist (ft)		1250			847			4848			905	
Turn Bay Length (ft)	400		335	280			125			65		
Base Capacity (vph)	226	1337	1171	634	1332		375	886		383	610	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.11	0.21	0.10	0.19	0.66		0.52	0.07		0.06	0.14	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 70.8												
Natural Cycle: 80												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.86												

Timings

7: Black Forest Road & Hodgen Road

Background Traffic Conditions

Year 2042 - AM Peak Hour

Intersection Signal Delay: 20.6

Intersection LOS: C

Intersection Capacity Utilization 78.7%







ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: Black Forest Road & Hodgen Road

 Ø2	 Ø3	 Ø4
25 s	11 s	54 s
 Ø6	 Ø7	 Ø8
25 s	11 s	54 s

HCM 6th TWSC




8: Hodgen Road & Black Forrest Road

Background Traffic Conditions

Year 2042 - AM Peak Hour

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	275	789	2	0	4
Future Vol, veh/h	4	275	789	2	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	299	858	2	0	4

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	860	0	0 1166 859
Stage 1	-	-	- 859 -
Stage 2	-	-	- 307 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	781	-	- 214 356
Stage 1	-	-	- 415 -
Stage 2	-	-	- 746 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	781	-	- 213 356
Mov Cap-2 Maneuver	-	-	- 213 -
Stage 1	-	-	- 413 -
Stage 2	-	-	- 746 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	781	-	-	-	356
HCM Lane V/C Ratio	0.006	-	-	-	0.012
HCM Control Delay (s)	9.6	0	-	-	15.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th Roundabout
9: Allen Ranch Road & Old Stagecoach Road

Background Traffic Conditions
Year 2042 - AM Peak Hour

Intersection			
Intersection Delay, s/veh	2.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	16	42	5
Demand Flow Rate, veh/h	16	43	5
Vehicles Circulating, veh/h	5	0	8
Vehicles Exiting, veh/h	38	13	13
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	2.7	2.9	2.7
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	16	43	5
Cap Entry Lane, veh/h	1373	1380	1369
Entry HV Adj Factor	0.990	0.983	1.000
Flow Entry, veh/h	16	42	5
Cap Entry, veh/h	1359	1356	1369
V/C Ratio	0.012	0.031	0.004
Control Delay, s/veh	2.7	2.9	2.7
LOS	A	A	A
95th %tile Queue, veh	0	0	0

HCM 6th Roundabout
10: Shortwall Drive & Old Stagecoach Road & Stagecoach Road

Background Traffic Conditions
Year 2042 - AM Peak Hour

























Intersection			
Intersection Delay, s/veh	2.9		
Intersection LOS	A		
Approach	WB	NB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	13	49	35
Demand Flow Rate, veh/h	13	50	36
Vehicles Circulating, veh/h	20	10	5
Vehicles Exiting, veh/h	40	30	28
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	2.7	3.0	2.9
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LR	LR
Assumed Moves	LR	LR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	13	50	36
Cap Entry Lane, veh/h	1352	1366	1373
Entry HV Adj Factor	1.000	0.980	0.972
Flow Entry, veh/h	13	49	35
Cap Entry, veh/h	1352	1339	1335
V/C Ratio	0.010	0.037	0.026
Control Delay, s/veh	2.7	3.0	2.9
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Timings

1: State Highway 83 & Hodgen Road

Background Traffic Conditions

Year 2042 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	321	94	199	173	260	92	616	305	374	598	108
Future Volume (vph)	47	321	94	199	173	260	92	616	305	374	598	108
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1820	0
Flt Permitted	0.579			0.352			0.154			0.083		
Satd. Flow (perm)	1079	1863	1583	656	1863	1583	287	1863	1583	155	1820	0
Satd. Flow (RTOR)			145			283			209		10	
Lane Group Flow (vph)	51	349	102	216	188	283	100	670	332	407	767	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	35.0	35.0	6.0	35.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	14.0	12.0	42.0	42.0	12.0	42.0	
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	12.0	49.0	49.0	27.0	64.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%	10.0%	40.8%	40.8%	22.5%	53.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0	6.0	7.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	
Act Effect Green (s)	38.0	38.0	38.0	38.0	38.0	38.0	49.0	42.0	42.0	70.0	57.0	
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32	0.32	0.41	0.35	0.35	0.58	0.48	
v/c Ratio	0.15	0.59	0.17	1.04	0.32	0.41	0.52	1.03	0.48	1.09	0.88	
Control Delay	31.0	39.5	2.2	115.4	33.0	5.3	24.5	81.3	13.4	107.6	41.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	31.0	39.5	2.2	115.4	33.0	5.3	24.5	81.3	13.4	107.6	41.6	
LOS	C	D	A	F	C	A	C	F	B	F	D	
Approach Delay		31.0			47.5			55.7			64.5	
Approach LOS		C			D			E			E	
Queue Length 50th (ft)	28	227	0	~181	110	0	32	~554	67	~304	517	
Queue Length 95th (ft)	61	327	16	#337	175	62	58	#785	153	#505	#771	
Internal Link Dist (ft)		824			1611			1078			1286	
Turn Bay Length (ft)	420		420	350		350	120		650	525		
Base Capacity (vph)	341	589	600	207	589	694	191	652	689	373	869	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.59	0.17	1.04	0.32	0.41	0.52	1.03	0.48	1.09	0.88	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Natural Cycle: 110												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 1.09												

Timings

1: State Highway 83 & Hodgen Road

Background Traffic Conditions

Year 2042 - AM Peak Hour

Intersection Signal Delay: 53.5

Intersection LOS: D

Intersection Capacity Utilization 101.9%

ICU Level of Service G

Analysis Period (min) 15







~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: State Highway 83 & Hodgen Road









 Ø1	 Ø2	 Ø4
27 s	49 s	44 s
 Ø5	 Ø6	 Ø8
12 s	64 s	44 s

HCM 6th TWSC

2: State Highway 83 & Stagecoach Road

Background Traffic Conditions

Year 2042 - AM Peak Hour























Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	5	47	5	9	2	1075	23	7	825	0
Future Vol, veh/h	2	0	5	47	5	9	2	1075	23	7	825	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	135	-	-	320	415	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	5	51	5	10	2	1168	25	8	897	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1504	2110	449	1637	2085	584	897	0	0	1193	0	0
Stage 1	913	913	-	1172	1172	-	-	-	-	-	-	-
Stage 2	591	1197	-	465	913	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	84	50	557	67	52	455	753	-	-	581	-	-
Stage 1	294	350	-	204	264	-	-	-	-	-	-	-
Stage 2	460	257	-	547	350	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	74	49	557	65	51	455	753	-	-	581	-	-
Mov Cap-2 Maneuver	74	49	-	65	51	-	-	-	-	-	-	-
Stage 1	292	345	-	202	262	-	-	-	-	-	-	-
Stage 2	437	255	-	534	345	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	24.3		166.1		0		0.1					
HCM LOS	C		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	753	-	-	194	63	455	581	-	-			
HCM Lane V/C Ratio	0.003	-	-	0.039	0.897	0.022	0.013	-	-			
HCM Control Delay (s)	9.8	0	-	24.3	192.6	13.1	11.3	-	-			
HCM Lane LOS	A	A	-	C	F	B	B	-	-			
HCM 95th %tile Q(veh)	0	-	-	0.1	4.2	0.1	0	-	-			

Timings

3: State Highway 83 & North Gate Boulevard

Background Traffic Conditions

Year 2042 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	191	0	742	0	0	0	722	1167	4	2	899	143
Future Volume (vph)	191	0	742	0	0	0	722	1167	4	2	899	143
Satd. Flow (prot)	1770	1863	1583	0	1863	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.757						0.154			0.219		
Satd. Flow (perm)	1410	1863	1583	0	1863	0	287	3539	1583	408	3539	1583
Satd. Flow (RTOR)			626						39			155
Lane Group Flow (vph)	208	0	807	0	0	0	785	1268	4	2	977	155
Turn Type	Perm		Perm				pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2		2	6		6
Detector Phase	4	4	4	8	8		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		10.0	12.0	12.0	11.0	11.0	11.0
Total Split (s)	23.0	23.0	23.0	23.0	23.0		33.0	61.0	61.0	28.0	28.0	28.0
Total Split (%)	27.4%	27.4%	27.4%	27.4%	27.4%		39.3%	72.6%	72.6%	33.3%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	5.0	5.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0		5.0	7.0	7.0	6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	Max
Act Effect Green (s)	17.0		17.0				56.0	54.0	54.0	22.0	22.0	22.0
Actuated g/C Ratio	0.20		0.20				0.67	0.64	0.64	0.26	0.26	0.26
v/c Ratio	0.73		0.99				1.15	0.56	0.00	0.02	1.06	0.29
Control Delay	48.2		38.0				104.9	9.5	0.0	24.0	77.1	6.0
Queue Delay	0.0		0.0				0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2		38.0				104.9	9.5	0.0	24.0	77.1	6.0
LOS	D		D				F	A	A	C	E	A
Approach Delay		40.1						45.9			67.3	
Approach LOS		D						D			E	
Queue Length 50th (ft)	103		104				~439	173	0	1	~300	0
Queue Length 95th (ft)	#205		#372				#658	225	0	6	#421	44
Internal Link Dist (ft)		997			136			1617			2154	
Turn Bay Length (ft)	225		285				900		400	750		730
Base Capacity (vph)	285		819				685	2275	1031	106	926	529
Starvation Cap Reductn	0		0				0	0	0	0	0	0
Spillback Cap Reductn	0		0				0	0	0	0	0	0
Storage Cap Reductn	0		0				0	0	0	0	0	0
Reduced v/c Ratio	0.73		0.99				1.15	0.56	0.00	0.02	1.06	0.29

Intersection Summary

Cycle Length: 84

Actuated Cycle Length: 84

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.15

Timings 3: State Highway 83 & North Gate Boulevard

Background Traffic Conditions
Year 2042 - AM Peak Hour

Intersection Signal Delay: 50.3

Intersection LOS: D

Intersection Capacity Utilization 89.6%

ICU Level of Service E

Analysis Period (min) 15






~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: State Highway 83 & North Gate Boulevard

 Ø2 61 s		 Ø4 23 s	
 Ø5 33 s	 Ø6 28 s	 Ø8 23 s	

Timings

4: State Highway 83 & Shoup Road

Background Traffic Conditions

Year 2042 - AM Peak Hour

	↑	↗	↘	↓	↙	↖
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑↑	↗	↘	↑↑↑	↘	↗
Traffic Volume (vph)	1869	446	331	1452	202	155
Future Volume (vph)	1869	446	331	1452	202	155
Satd. Flow (prot)	5085	1583	1770	5085	1770	1583
Flt Permitted			0.080			
Satd. Flow (perm)	5085	1583	149	5085	1863	1583
Satd. Flow (RTOR)		485				168
Lane Group Flow (vph)	2032	485	360	1578	220	168
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0	20.0	4.0	20.0	4.0	4.0
Minimum Split (s)	27.5	27.5	9.0	27.5	10.0	10.0
Total Split (s)	51.0	51.0	23.0	74.0	21.0	21.0
Total Split (%)	53.7%	53.7%	24.2%	77.9%	22.1%	22.1%
Yellow Time (s)	5.5	5.5	3.0	5.5	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	Max	Max	None	Max	None	None
Act Effect Green (s)	44.7	44.7	69.0	66.5	14.0	14.0
Actuated g/C Ratio	0.48	0.48	0.73	0.71	0.15	0.15
v/c Ratio	0.84	0.48	0.90	0.44	0.79	0.44
Control Delay	26.3	3.3	51.2	6.4	59.8	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	3.3	51.2	6.4	59.8	9.9
LOS	C	A	D	A	E	A
Approach Delay	21.9			14.7	38.2	
Approach LOS	C			B	D	
Queue Length 50th (ft)	391	0	157	131	128	0
Queue Length 95th (ft)	463	53	#315	157	#235	55
Internal Link Dist (ft)	1042			1734	675	
Turn Bay Length (ft)		710	980			500
Base Capacity (vph)	2414	1005	419	3596	297	393
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.48	0.86	0.44	0.74	0.43
Intersection Summary						
Cycle Length: 95						
Actuated Cycle Length: 94.1						
Natural Cycle: 75						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.90						

Timings

4: State Highway 83 & Shoup Road

Background Traffic Conditions

Year 2042 - AM Peak Hour

Intersection Signal Delay: 20.3

Intersection LOS: C

Intersection Capacity Utilization 81.1%





ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: State Highway 83 & Shoup Road

















 Ø1	 Ø2	
23 s	51 s	
 Ø6		 Ø8
74 s		21 s

Timings

5: Black Forest Road & Shoup Road

Background Traffic Conditions

Year 2042 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	264	166	29	81	11	85	282	36	27	256	101
Future Volume (vph)	112	264	166	29	81	11	85	282	36	27	256	101
Satd. Flow (prot)	0	1769	0	0	1818	0	0	1822	0	0	1790	0
Flt Permitted		0.896			0.826			0.822			0.952	
Satd. Flow (perm)	0	1601	0	0	1520	0	0	1513	0	0	1709	0
Satd. Flow (RTOR)		32			7			7			24	
Lane Group Flow (vph)	0	589	0	0	132	0	0	438	0	0	417	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		18.0	18.0		18.0	18.0	
Total Split (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	
Total Split (%)	52.2%	52.2%		52.2%	52.2%		47.8%	47.8%		47.8%	47.8%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effect Green (s)		33.0			33.0			37.3			37.3	
Actuated g/C Ratio		0.40			0.40			0.45			0.45	
v/c Ratio		0.89			0.22			0.64			0.53	
Control Delay		39.0			15.5			24.0			19.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		39.0			15.5			24.0			19.9	
LOS		D			B			C			B	
Approach Delay		39.0			15.5			24.0			19.9	
Approach LOS		D			B			C			B	
Queue Length 50th (ft)		261			41			171			146	
Queue Length 95th (ft)		#421			77			311			263	
Internal Link Dist (ft)		965			1070			1292			16527	
Turn Bay Length (ft)												
Base Capacity (vph)		819			766			689			787	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.72			0.17			0.64			0.53	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 82.4												
Natural Cycle: 60												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.89												

Timings

5: Black Forest Road & Shoup Road

Background Traffic Conditions

Year 2042 - AM Peak Hour

Intersection Signal Delay: 27.8

Intersection LOS: C

Intersection Capacity Utilization 91.2%





ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: Black Forest Road & Shoup Road

 Ø2	 Ø4
43 s	47 s
 Ø6	 Ø8
43 s	47 s























Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	5	4	11	4	4	4	5	200	0	9	200	2
Future Vol, veh/h	5	4	11	4	4	4	5	200	0	9	200	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	4	12	4	4	4	5	217	0	10	217	2
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	469	465	218	473	466	217	219	0	0	217	0	0
Stage 1	238	238	-	227	227	-	-	-	-	-	-	-
Stage 2	231	227	-	246	239	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	505	495	822	501	494	823	1350	-	-	1353	-	-
Stage 1	765	708	-	776	716	-	-	-	-	-	-	-
Stage 2	772	716	-	758	708	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	494	489	822	486	488	823	1350	-	-	1353	-	-
Mov Cap-2 Maneuver	494	489	-	486	488	-	-	-	-	-	-	-
Stage 1	762	702	-	773	713	-	-	-	-	-	-	-
Stage 2	760	713	-	736	702	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	10.9		11.5			0.2			0.3			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1350	-	-	631	564	1353	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.034	0.023	0.007	-	-				
HCM Control Delay (s)	7.7	0	-	10.9	11.5	7.7	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

Timings

7: Black Forest Road & Hodgen Road

Background Traffic Conditions

Year 2042 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	694	185	58	377	20	128	6	114	49	2	38
Future Volume (vph)	107	694	185	58	377	20	128	6	114	49	2	38
Satd. Flow (prot)	1770	1863	1583	1770	1848	0	1770	1598	0	1770	1596	0
Flt Permitted	0.420			0.190			0.729			0.673		
Satd. Flow (perm)	782	1863	1583	354	1848	0	1358	1598	0	1254	1596	0
Satd. Flow (RTOR)			201		5			124			41	
Lane Group Flow (vph)	116	754	201	63	432	0	139	131	0	53	43	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	11.0	18.0	18.0	11.0	18.0		14.0	14.0		14.0	14.0	
Total Split (s)	11.0	57.0	57.0	11.0	57.0		22.0	22.0		22.0	22.0	
Total Split (%)	12.2%	63.3%	63.3%	12.2%	63.3%		24.4%	24.4%		24.4%	24.4%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Act Effect Green (s)	36.9	34.4	34.4	35.3	31.5		12.5	12.5		12.5	12.5	
Actuated g/C Ratio	0.56	0.52	0.52	0.54	0.48		0.19	0.19		0.19	0.19	
v/c Ratio	0.22	0.77	0.22	0.20	0.49		0.54	0.32		0.22	0.13	
Control Delay	6.2	19.8	2.2	6.6	13.7		37.6	9.9		30.7	12.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	6.2	19.8	2.2	6.6	13.7		37.6	9.9		30.7	12.0	
LOS	A	B	A	A	B		D	A		C	B	
Approach Delay		15.0			12.8			24.2			22.3	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	16	258	0	8	113		54	2		19	1	
Queue Length 95th (ft)	35	431	28	22	194		135	51		60	29	
Internal Link Dist (ft)		1250			847			4848			905	
Turn Bay Length (ft)	400		335	280			125			65		
Base Capacity (vph)	522	1469	1290	309	1458		363	518		335	457	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.22	0.51	0.16	0.20	0.30		0.38	0.25		0.16	0.09	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 65.6												
Natural Cycle: 60												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.77												

Timings

7: Black Forest Road & Hodgen Road

Background Traffic Conditions

Year 2042 - AM Peak Hour

Intersection Signal Delay: 16.1







Intersection LOS: B

Intersection Capacity Utilization 69.5%

ICU Level of Service C

Analysis Period (min) 15




Splits and Phases: 7: Black Forest Road & Hodgen Road

 Ø2	 Ø3	 Ø4
22 s	11 s	57 s
 Ø6	 Ø7	 Ø8
22 s	11 s	57 s

HCM 6th TWSC

8: Hodgen Road & Black Forrest Road

Background Traffic Conditions
Year 2042 - AM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	726	387	0	0	0
Future Vol, veh/h	4	726	387	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	789	421	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	421	0	-	0	1218	421
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	797	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1138	-	-	-	199	632
Stage 1	-	-	-	-	662	-
Stage 2	-	-	-	-	444	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1138	-	-	-	198	632
Mov Cap-2 Maneuver	-	-	-	-	198	-
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	444	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1138	-	-	-	-	
HCM Lane V/C Ratio	0.004	-	-	-	-	
HCM Control Delay (s)	8.2	0	-	-	0	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	

HCM 6th Roundabout
9: Allen Ranch Road & Old Stagecoach Road

Background Traffic Conditions
Year 2042 - AM Peak Hour

Intersection			
Intersection Delay, s/veh	2.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	22	9	2
Demand Flow Rate, veh/h	22	9	2
Vehicles Circulating, veh/h	4	0	22
Vehicles Exiting, veh/h	5	24	4
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	2.8	2.7	2.7
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	22	9	2
Cap Entry Lane, veh/h	1374	1380	1349
Entry HV Adj Factor	0.980	0.989	1.000
Flow Entry, veh/h	22	9	2
Cap Entry, veh/h	1347	1365	1349
V/C Ratio	0.016	0.007	0.001
Control Delay, s/veh	2.8	2.7	2.7
LOS	A	A	A
95th %tile Queue, veh	0	0	0

HCM 6th Roundabout
10: Shortwall Drive & Old Stagecoach Road & Stagecoach Road

Background Traffic Conditions
Year 2042 - AM Peak Hour

























Intersection			
Intersection Delay, s/veh	2.8		
Intersection LOS	A		
Approach	WB	NB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	33	25	26
Demand Flow Rate, veh/h	34	25	26
Vehicles Circulating, veh/h	10	2	30
Vehicles Exiting, veh/h	17	54	14
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	2.9	2.8	2.8
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LR	LR
Assumed Moves	LR	LR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	34	25	26
Cap Entry Lane, veh/h	1366	1377	1338
Entry HV Adj Factor	0.971	1.000	1.000
Flow Entry, veh/h	33	25	26
Cap Entry, veh/h	1326	1377	1338
V/C Ratio	0.025	0.018	0.019
Control Delay, s/veh	2.9	2.8	2.8
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Timings

1: State Highway 83 & Hodgen Road

Total Traffic Conditions

Year 2027 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	104	97	279	197	264	134	353	83	133	447	63
Future Volume (vph)	100	104	97	279	197	264	134	353	83	133	447	63
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1829	0
Flt Permitted	0.537			0.684			0.311			0.469		
Satd. Flow (perm)	1000	1863	1583	1274	1863	1583	579	1863	1583	874	1829	0
Satd. Flow (RTOR)			135			287			121		12	
Lane Group Flow (vph)	109	113	105	303	214	287	146	384	90	145	554	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	14.0	12.0	42.0	42.0	12.0	42.0	
Total Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	45.0	45.0	12.0	45.0	
Total Split (%)	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	14.8%	55.6%	55.6%	14.8%	55.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0	6.0	7.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	45.0	38.0	38.0	45.0	38.0	
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.22	0.56	0.47	0.47	0.56	0.47	
v/c Ratio	0.49	0.27	0.23	1.07	0.52	0.50	0.36	0.44	0.11	0.26	0.64	
Control Delay	36.2	28.2	4.3	107.1	32.9	6.9	8.9	16.4	1.7	7.6	20.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.2	28.2	4.3	107.1	32.9	6.9	8.9	16.4	1.7	7.6	20.2	
LOS	D	C	A	F	C	A	A	B	A	A	C	
Approach Delay		23.2			51.6			12.5			17.6	
Approach LOS		C			D			B			B	
Queue Length 50th (ft)	49	48	0	~173	96	0	27	124	0	26	199	
Queue Length 95th (ft)	100	92	25	#325	163	60	49	195	14	48	307	
Internal Link Dist (ft)		824			1611			1078			1286	
Turn Bay Length (ft)	420		420	350		350	120		650	525		
Base Capacity (vph)	222	414	456	283	414	575	409	874	806	551	864	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.49	0.27	0.23	1.07	0.52	0.50	0.36	0.44	0.11	0.26	0.64	

Intersection Summary

Cycle Length: 81

Actuated Cycle Length: 81

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Pretimed

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 28.2

Intersection LOS: C

Intersection Capacity Utilization 79.5%

ICU Level of Service D

Analysis Period (min) 15

Timings

1: State Highway 83 & Hodgen Road

Total Traffic Conditions

Year 2027 - AM Peak Hour







~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: State Highway 83 & Hodgen Road

 Ø1	 Ø2 (R)	 Ø4
12 s	45 s	24 s
 Ø5	 Ø6 (R)	 Ø8
12 s	45 s	24 s

HCM 6th TWSC
2: State Highway 83 & Stagecoach Road

Total Traffic Conditions
Year 2027 - AM Peak Hour

Intersection												
Int Delay, s/veh	36											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔	↔	↔	
Traffic Vol, veh/h	1	1	5	142	0	150	0	434	111	94	727	1
Future Vol, veh/h	1	1	5	142	0	150	0	434	111	94	727	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	135	-	-	320	415	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	5	154	0	163	0	472	121	102	790	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1609	1588	791	1470	1467	472	791	0	0	593	0	0
Stage 1	995	995	-	472	472	-	-	-	-	-	-	-
Stage 2	614	593	-	998	995	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	84	108	390	~ 105	128	592	829	-	-	983	-	-
Stage 1	295	323	-	573	559	-	-	-	-	-	-	-
Stage 2	479	493	-	294	323	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	56	97	390	~ 95	115	592	829	-	-	983	-	-
Mov Cap-2 Maneuver	56	97	-	~ 95	115	-	-	-	-	-	-	-
Stage 1	295	289	-	573	559	-	-	-	-	-	-	-
Stage 2	347	493	-	259	289	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27	202	0	1
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	829	-	-	171 95 592	983	-	-
HCM Lane V/C Ratio	-	-	-	0.044 1.625 0.275	0.104	-	-
HCM Control Delay (s)	0	-	-	27\$ 401.3 13.4	9.1	-	-
HCM Lane LOS	A	-	-	D F B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1 12.2 1.1	0.3	-	-




















Notes												
~: Volume exceeds capacity			\$: Delay exceeds 300s			+: Computation Not Defined			*: All major volume in platoon			

Timings

2: State Highway 83 & Stagecoach Road

Total Traffic Conditions

Year 2027 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1	5	142	0	150	0	434	111	94	727	1
Future Volume (vph)	1	1	5	142	0	150	0	434	111	94	727	1
Satd. Flow (prot)	0	1672	0	0	1770	1583	0	1863	1583	1770	1863	0
Flt Permitted		0.953			0.753					0.332		
Satd. Flow (perm)	0	1605	0	0	1403	1583	0	1863	1583	618	1863	0
Satd. Flow (RTOR)		5				163			130			
Lane Group Flow (vph)	0	7	0	0	154	163	0	472	121	102	791	0
Turn Type	Perm	NA		Perm	NA	Perm		NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2		2	6		
Detector Phase	4	4		8	8	8	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	35.0	35.0	35.0	14.0	35.0	
Minimum Split (s)	13.5	13.5		13.5	13.5	13.5	42.0	42.0	42.0	21.0	42.0	
Total Split (s)	17.0	17.0		17.0	17.0	17.0	42.0	42.0	42.0	21.0	63.0	
Total Split (%)	21.3%	21.3%		21.3%	21.3%	21.3%	52.5%	52.5%	52.5%	26.3%	78.8%	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.5			5.5	5.5		7.0	7.0	7.0	7.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Act Effct Green (s)		11.0			11.0	11.0		39.7	39.7	56.5	56.5	
Actuated g/C Ratio		0.14			0.14	0.14		0.50	0.50	0.71	0.71	
v/c Ratio		0.03			0.80	0.46		0.51	0.14	0.16	0.60	
Control Delay		21.5			63.9	10.1		18.1	2.9	4.4	8.5	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		21.5			63.9	10.1		18.1	2.9	4.4	8.5	
LOS		C			E	B		B	A	A	A	
Approach Delay		21.5			36.2			15.0			8.1	
Approach LOS		C			D			B			A	
Queue Length 50th (ft)		1			75	0		171	0	14	172	
Queue Length 95th (ft)		12			#170	52		265	25	27	265	
Internal Link Dist (ft)		862			898			913			1101	
Turn Bay Length (ft)						135			320	415		
Base Capacity (vph)		235			201	367		924	850	638	1315	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.03			0.77	0.44		0.51	0.14	0.16	0.60	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												

Timings 2: State Highway 83 & Stagecoach Road

Total Traffic Conditions
Year 2027 - AM Peak Hour

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 15.3

Intersection LOS: B

Intersection Capacity Utilization 98.3%







ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.






















Splits and Phases: 2: State Highway 83 & Stagecoach Road

 Ø1	 Ø2 (R)	 Ø4
21 s	42 s	17 s
 Ø6 (R)	 Ø8	 Ø8
63 s		17 s

Timings

3: State Highway 83 & North Gate Boulevard

Total Traffic Conditions
Year 2027 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	0	373	0	0	0	599	497	0	0	858	196
Future Volume (vph)	84	0	373	0	0	0	599	497	0	0	858	196
Satd. Flow (prot)	1770	1863	1583	0	1863	0	1770	3539	0	1863	3539	1583
Flt Permitted	0.757						0.151					
Satd. Flow (perm)	1410	1863	1583	0	1863	0	281	3539	0	1863	3539	1583
Satd. Flow (RTOR)			471									213
Lane Group Flow (vph)	91	0	405	0	0	0	651	540	0	0	933	213
Turn Type	Perm		Perm				pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		10.0	12.0		11.0	11.0	11.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0		25.0	60.0		35.0	35.0	35.0
Total Split (%)	28.6%	28.6%	28.6%	28.6%	28.6%		29.8%	71.4%		41.7%	41.7%	41.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	5.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0		5.0	7.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	10.4		10.4				55.1	53.1			29.0	29.0
Actuated g/C Ratio	0.14		0.14				0.72	0.69			0.38	0.38
v/c Ratio	0.48		0.65				1.10	0.22			0.69	0.29
Control Delay	38.7		6.9				88.7	4.9			23.9	4.0
Queue Delay	0.0		0.0				0.0	0.0			0.0	0.0
Total Delay	38.7		6.9				88.7	4.9			23.9	4.0
LOS	D		A				F	A			C	A
Approach Delay		12.7						50.7			20.2	
Approach LOS		B						D			C	
Queue Length 50th (ft)	41		0				~289	40			191	0
Queue Length 95th (ft)	84		40				#546	75			288	43
Internal Link Dist (ft)		997			136			1617			2154	
Turn Bay Length (ft)	225		285				900					730
Base Capacity (vph)	332		733				592	2456			1343	733
Starvation Cap Reductn	0		0				0	0			0	0
Spillback Cap Reductn	0		0				0	0			0	0
Storage Cap Reductn	0		0				0	0			0	0
Reduced v/c Ratio	0.27		0.55				1.10	0.22			0.69	0.29

Intersection Summary

Cycle Length: 84

Actuated Cycle Length: 76.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.10

Timings 3: State Highway 83 & North Gate Boulevard

Total Traffic Conditions
Year 2027 - AM Peak Hour

Intersection Signal Delay: 31.7

Intersection LOS: C

Intersection Capacity Utilization 75.7%

ICU Level of Service D

Analysis Period (min) 15






~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: State Highway 83 & North Gate Boulevard

 Ø2 60 s		 Ø4 24 s	
 Ø5 25 s	 Ø6 35 s	 Ø8 24 s	

Timings
4: State Highway 83 & Shoup Road

Total Traffic Conditions
Year 2027 - AM Peak Hour

	↑	↗	↘	↓	↙	↖
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↗	↘	↑↑	↘	↗
Traffic Volume (vph)	963	128	81	1185	358	239
Future Volume (vph)	963	128	81	1185	358	239
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.179			
Satd. Flow (perm)	3539	1583	333	3539	1863	1583
Satd. Flow (RTOR)		139				260
Lane Group Flow (vph)	1047	139	88	1288	389	260
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0	20.0	4.0	20.0	4.0	4.0
Minimum Split (s)	27.5	27.5	9.0	27.5	10.0	10.0
Total Split (s)	45.0	45.0	20.0	65.0	30.0	30.0
Total Split (%)	47.4%	47.4%	21.1%	68.4%	31.6%	31.6%
Yellow Time (s)	5.5	5.5	3.0	5.5	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	Max	Max	None	Max	None	None
Act Effect Green (s)	47.5	47.5	60.1	57.6	22.2	22.2
Actuated g/C Ratio	0.51	0.51	0.64	0.62	0.24	0.24
v/c Ratio	0.58	0.16	0.27	0.59	0.88	0.45
Control Delay	18.9	3.1	8.8	12.4	56.3	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	3.1	8.8	12.4	56.3	6.6
LOS	B	A	A	B	E	A
Approach Delay	17.1			12.2	36.4	
Approach LOS	B			B	D	
Queue Length 50th (ft)	238	0	19	233	222	0
Queue Length 95th (ft)	316	31	37	295	#373	59
Internal Link Dist (ft)	1042			1734	675	
Turn Bay Length (ft)		710	980			500
Base Capacity (vph)	1802	874	445	2184	479	600
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.16	0.20	0.59	0.81	0.43
Intersection Summary						
Cycle Length: 95						
Actuated Cycle Length: 93.3						
Natural Cycle: 60						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.88						

Timings

4: State Highway 83 & Shoup Road

Total Traffic Conditions

Year 2027 - AM Peak Hour

Intersection Signal Delay: 18.9

Intersection LOS: B

Intersection Capacity Utilization 66.4%

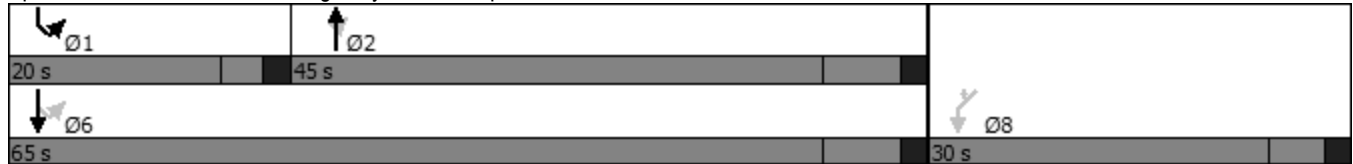
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: State Highway 83 & Shoup Road



















Timings

5: Black Forest Road & Shoup Road

Total Traffic Conditions

Year 2027 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	61	45	16	128	25	97	225	10	30	270	140
Future Volume (vph)	84	61	45	16	128	25	97	225	10	30	270	140
Satd. Flow (prot)	0	1763	0	0	1816	0	0	1829	0	0	1777	0
Flt Permitted		0.727			0.961			0.765			0.960	
Satd. Flow (perm)	0	1311	0	0	1754	0	0	1419	0	0	1711	0
Satd. Flow (RTOR)		18			10			3			41	
Lane Group Flow (vph)	0	206	0	0	183	0	0	361	0	0	478	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		18.0	18.0		18.0	18.0	
Total Split (s)	35.0	35.0		35.0	35.0		55.0	55.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		38.9%	38.9%		61.1%	61.1%		61.1%	61.1%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effect Green (s)		15.5			15.5			49.2			49.2	
Actuated g/C Ratio		0.20			0.20			0.64			0.64	
v/c Ratio		0.74			0.51			0.40			0.43	
Control Delay		42.2			30.3			9.2			8.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		42.2			30.3			9.2			8.5	
LOS		D			C			A			A	
Approach Delay		42.2			30.3			9.2			8.5	
Approach LOS		D			C			A			A	
Queue Length 50th (ft)		84			73			71			88	
Queue Length 95th (ft)		155			131			161			193	
Internal Link Dist (ft)		965			1070			1292			16527	
Turn Bay Length (ft)												
Base Capacity (vph)		508			671			910			1111	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.41			0.27			0.40			0.43	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 76.7												
Natural Cycle: 40												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.74												





Timings
5: Black Forest Road & Shoup Road







Total Traffic Conditions
Year 2027 - AM Peak Hour

Intersection Signal Delay: 17.6
Intersection Capacity Utilization 80.5%
Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service D

Splits and Phases: 5: Black Forest Road & Shoup Road

 Ø2	 Ø4
55 s	35 s
 Ø6	 Ø8
55 s	35 s



















Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	0	148	6	1	2	100	96	1	1	132	50
Future Vol, veh/h	73	0	148	6	1	2	100	96	1	1	132	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	195	-	-	-	-	195
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	79	0	161	7	1	2	109	104	1	1	143	54
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	469	468	143	576	522	105	197	0	0	105	0	0
Stage 1	145	145	-	323	323	-	-	-	-	-	-	-
Stage 2	324	323	-	253	199	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	505	493	905	428	459	949	1376	-	-	1486	-	-
Stage 1	858	777	-	689	650	-	-	-	-	-	-	-
Stage 2	688	650	-	751	736	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	472	454	905	330	422	949	1376	-	-	1486	-	-
Mov Cap-2 Maneuver	472	454	-	330	422	-	-	-	-	-	-	-
Stage 1	790	776	-	635	599	-	-	-	-	-	-	-
Stage 2	631	599	-	617	735	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	12.9		14.3		4		0					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1376	-	-	695	397	1486	-	-				
HCM Lane V/C Ratio	0.079	-	-	0.346	0.025	0.001	-	-				
HCM Control Delay (s)	7.8	-	-	12.9	14.3	7.4	0	-				
HCM Lane LOS	A	-	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0.3	-	-	1.5	0.1	0	-	-				

Timings

6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle

Total Traffic Conditions

Year 2027 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	0	148	6	1	2	100	96	1	1	132	50
Future Volume (vph)	73	0	148	6	1	2	100	96	1	1	132	50
Satd. Flow (prot)	0	1666	0	0	1751	0	1770	1861	0	0	1863	1583
Flt Permitted		0.886			0.726		0.545				0.999	
Satd. Flow (perm)	0	1500	0	0	1316	0	1015	1861	0	0	1861	1583
Satd. Flow (RTOR)		164			2			1				155
Lane Group Flow (vph)	0	240	0	0	10	0	109	105	0	0	144	54
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	8.0		8.0	8.0	8.0
Minimum Split (s)	10.5	10.5		10.5	10.5		11.0	14.0		14.0	14.0	14.0
Total Split (s)	25.0	25.0		25.0	25.0		13.0	35.0		22.0	22.0	22.0
Total Split (%)	41.7%	41.7%		41.7%	41.7%		21.7%	58.3%		36.7%	36.7%	36.7%
Yellow Time (s)	3.5	3.5		3.5	3.5		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)		5.5			5.5		6.0	6.0			6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)		9.4			9.4		39.1	39.1			28.4	28.4
Actuated g/C Ratio		0.16			0.16		0.65	0.65			0.47	0.47
v/c Ratio		0.65			0.05		0.15	0.09			0.16	0.07
Control Delay		16.5			17.6		5.5	5.1			13.0	0.2
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		16.5			17.6		5.5	5.1			13.0	0.2
LOS		B			B		A	A			B	A
Approach Delay		16.5			17.6			5.3			9.5	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		25			3		11	11			29	0
Queue Length 95th (ft)		74			12		36	34			78	0
Internal Link Dist (ft)		750			806			16527			4563	
Turn Bay Length (ft)							195					195
Base Capacity (vph)		598			429		756	1213			880	830
Starvation Cap Reductn		0			0		0	0			0	0
Spillback Cap Reductn		0			0		0	0			0	0
Storage Cap Reductn		0			0		0	0			0	0
Reduced v/c Ratio		0.40			0.02		0.14	0.09			0.16	0.07
Intersection Summary												
Cycle Length: 60												
Actuated Cycle Length: 60												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 40												
Control Type: Actuated-Coordinated												

Timings

6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle

Total Traffic Conditions

Year 2027 - AM Peak Hour

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 10.8

Intersection LOS: B

Intersection Capacity Utilization 41.5%

ICU Level of Service A










Analysis Period (min) 15

Splits and Phases: 6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle



HCM 6th TWSC
7: Ridge Run Road/Black Forest Road & Hodgen Road

Total Traffic Conditions
Year 2027 - AM Peak Hour

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	190	6	0	525	13	8	0	0	13	0	49
Future Vol, veh/h	14	190	6	0	525	13	8	0	0	13	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	400	-	335	280	-	-	-	-	-	65	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	207	7	0	571	14	9	0	0	14	0	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	585	0	0	214	0	0	842	822	207	819	822	578
Stage 1	-	-	-	-	-	-	237	237	-	578	578	-
Stage 2	-	-	-	-	-	-	605	585	-	241	244	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	990	-	-	1356	-	-	284	309	833	294	309	516
Stage 1	-	-	-	-	-	-	766	709	-	501	501	-
Stage 2	-	-	-	-	-	-	485	498	-	762	704	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	990	-	-	1356	-	-	252	304	833	290	304	516
Mov Cap-2 Maneuver	-	-	-	-	-	-	252	304	-	290	304	-
Stage 1	-	-	-	-	-	-	755	698	-	493	501	-
Stage 2	-	-	-	-	-	-	435	498	-	750	693	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	19.8	13.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	252	-	990	-	-	1356	-	-	290	516
HCM Lane V/C Ratio	0.035	-	0.015	-	-	-	-	-	0.049	0.103
HCM Control Delay (s)	19.8	0	8.7	-	-	0	-	-	18	12.8
HCM Lane LOS	C	A	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	0	-	-	0	-	-	0.2	0.3

Intersection												
Int Delay, s/veh	11.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕			↕			↕	
Traffic Vol, veh/h	2	176	97	87	507	1	155	0	60	0	0	2
Future Vol, veh/h	2	176	97	87	507	1	155	0	60	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	260	290	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	191	105	95	551	1	168	0	65	0	0	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	552	0	0	296	0	0	938	937	191	1022	1042	552
Stage 1	-	-	-	-	-	-	195	195	-	742	742	-
Stage 2	-	-	-	-	-	-	743	742	-	280	300	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1018	-	-	1265	-	-	244	265	851	214	230	533
Stage 1	-	-	-	-	-	-	807	739	-	408	422	-
Stage 2	-	-	-	-	-	-	407	422	-	727	666	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1018	-	-	1265	-	-	229	245	851	186	212	533
Mov Cap-2 Maneuver	-	-	-	-	-	-	229	245	-	186	212	-
Stage 1	-	-	-	-	-	-	805	738	-	407	390	-
Stage 2	-	-	-	-	-	-	375	390	-	670	665	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.2			54.9			11.8		
HCM LOS							F			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	288	1018	-	-	1265	-	-	533				
HCM Lane V/C Ratio	0.811	0.002	-	-	0.075	-	-	0.004				
HCM Control Delay (s)	54.9	8.5	0	-	8.1	-	-	11.8				
HCM Lane LOS	F	A	A	-	A	-	-	B				
HCM 95th %tile Q(veh)	6.6	0	-	-	0.2	-	-	0				

HCM 6th Roundabout
9: Allen Ranch Road & Old Stagecoach Road

Total Traffic Conditions
Year 2027 - AM Peak Hour

Intersection			
Intersection Delay, s/veh	4.2		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	182	279	55
Demand Flow Rate, veh/h	185	284	57
Vehicles Circulating, veh/h	21	27	162
Vehicles Exiting, veh/h	290	192	44
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.8	4.5	3.6
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	185	284	57
Cap Entry Lane, veh/h	1351	1342	1170
Entry HV Adj Factor	0.983	0.982	0.965
Flow Entry, veh/h	182	279	55
Cap Entry, veh/h	1327	1318	1129
V/C Ratio	0.137	0.212	0.049
Control Delay, s/veh	3.8	4.5	3.6
LOS	A	A	A
95th %tile Queue, veh	0	1	0

HCM 6th Roundabout
10: Shortwall Drive & Old Stagecoach Road & Stagecoach Road

Total Traffic Conditions
Year 2027 - AM Peak Hour

























Intersection			
Intersection Delay, s/veh	4.2		
Intersection LOS	A		
Approach	WB	NB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	268	57	211
Demand Flow Rate, veh/h	273	58	216
Vehicles Circulating, veh/h	40	181	3
Vehicles Exiting, veh/h	199	38	310
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.5	3.6	4.0
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LR	LR
Assumed Moves	LR	LR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	273	58	216
Cap Entry Lane, veh/h	1325	1147	1376
Entry HV Adj Factor	0.982	0.983	0.977
Flow Entry, veh/h	268	57	211
Cap Entry, veh/h	1300	1127	1344
V/C Ratio	0.206	0.051	0.157
Control Delay, s/veh	4.5	3.6	4.0
LOS	A	A	A
95th %tile Queue, veh	1	0	1

Timings

1: State Highway 83 & Hodgen Road

Total Traffic Conditions

Year 2027 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	244	214	128	141	197	180	456	196	278	461	70
Future Volume (vph)	30	244	214	128	141	197	180	456	196	278	461	70
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1825	0
Flt Permitted	0.660			0.434			0.291			0.363		
Satd. Flow (perm)	1229	1863	1583	808	1863	1583	542	1863	1583	676	1825	0
Satd. Flow (RTOR)			233			214			213		13	
Lane Group Flow (vph)	33	265	233	139	153	214	196	496	213	302	577	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	14.0	12.0	42.0	42.0	12.0	42.0	
Total Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	12.0	45.0	45.0	12.0	45.0	
Total Split (%)	29.6%	29.6%	29.6%	29.6%	29.6%	29.6%	14.8%	55.6%	55.6%	14.8%	55.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0	6.0	7.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	45.0	38.0	38.0	45.0	38.0	
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.22	0.56	0.47	0.47	0.56	0.47	
v/c Ratio	0.12	0.64	0.44	0.78	0.37	0.41	0.50	0.57	0.25	0.66	0.67	
Control Delay	26.7	36.7	6.8	60.2	29.8	6.8	11.5	18.7	2.7	16.4	21.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	26.7	36.7	6.8	60.2	29.8	6.8	11.5	18.7	2.7	16.4	21.0	
LOS	C	D	A	E	C	A	B	B	A	B	C	
Approach Delay		22.9			28.4			13.4			19.4	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	13	122	0	66	66	0	37	174	0	61	211	
Queue Length 95th (ft)	37	202	55	#162	120	53	64	267	34	99	325	
Internal Link Dist (ft)		824			1611			1078			1286	
Turn Bay Length (ft)	420		420	350		350	120		650	525		
Base Capacity (vph)	273	414	533	179	414	518	392	874	855	456	863	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.64	0.44	0.78	0.37	0.41	0.50	0.57	0.25	0.66	0.67	

Intersection Summary

Cycle Length: 81

Actuated Cycle Length: 81

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Pretimed

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 19.8

Intersection LOS: B

Intersection Capacity Utilization 85.3%

ICU Level of Service E

Analysis Period (min) 15

Timings

1: State Highway 83 & Hodgen Road







Total Traffic Conditions

Year 2027 - PM Peak Hour

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: State Highway 83 & Hodgen Road

 Ø1	 Ø2 (R)	 Ø4
12 s	45 s	24 s
 Ø5	 Ø6 (R)	 Ø8
12 s	45 s	24 s

HCM 6th TWSC
2: State Highway 83 & Stagecoach Road

Total Traffic Conditions
Year 2027 - PM Peak Hour

Intersection												
Int Delay, s/veh	179											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔	↔	↔	
Traffic Vol, veh/h	1	0	3	181	3	187	1	690	207	235	530	0
Future Vol, veh/h	1	0	3	181	3	187	1	690	207	235	530	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	135	-	-	320	415	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	3	197	3	203	1	750	225	255	576	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2054	2063	576	1840	1838	750	576	0	0	975	0	0
Stage 1	1086	1086	-	752	752	-	-	-	-	-	-	-
Stage 2	968	977	-	1088	1086	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	41	55	517	~ 58	76	411	997	-	-	707	-	-
Stage 1	262	292	-	402	418	-	-	-	-	-	-	-
Stage 2	305	329	-	261	292	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	14	35	517	~ 41	48	411	997	-	-	707	-	-
Mov Cap-2 Maneuver	14	35	-	~ 41	48	-	-	-	-	-	-	-
Stage 1	261	187	-	401	417	-	-	-	-	-	-	-
Stage 2	153	328	-	~ 166	187	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	80.5	\$ 974.3	0	4
HCM LOS	F	F		




















Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	997	-	-	52 41 411 707	-	-	-
HCM Lane V/C Ratio	0.001	-	-	0.084 4.878 0.495 0.361	-	-	-
HCM Control Delay (s)	8.6	0	-	80 \$ 1942.1 22 12.9	-	-	-
HCM Lane LOS	A	A	-	F F C B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3 23.1 2.7 1.6	-	-	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Timings

2: State Highway 83 & Stagecoach Road

Total Traffic Conditions
Year 2027 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	181	3	187	1	690	207	235	530	0
Future Volume (vph)	1	0	3	181	3	187	1	690	207	235	530	0
Satd. Flow (prot)	0	1655	0	0	1775	1583	0	1863	1583	1770	1863	0
Flt Permitted		0.933			0.727					0.108		
Satd. Flow (perm)	0	1562	0	0	1354	1583	0	1863	1583	201	1863	0
Satd. Flow (RTOR)		133				203			225			
Lane Group Flow (vph)	0	4	0	0	200	203	0	751	225	255	576	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2		2	6		
Detector Phase	4	4		8	8	8	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	35.0	35.0	35.0	14.0	35.0	
Minimum Split (s)	13.5	13.5		13.5	13.5	13.5	42.0	42.0	42.0	21.0	42.0	
Total Split (s)	21.0	21.0		21.0	21.0	21.0	48.0	48.0	48.0	21.0	69.0	
Total Split (%)	23.3%	23.3%		23.3%	23.3%	23.3%	53.3%	53.3%	53.3%	23.3%	76.7%	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.5			5.5	5.5		7.0	7.0	7.0	7.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Act Effect Green (s)		15.0			15.0	15.0		41.5	41.5	62.5	62.5	
Actuated g/C Ratio		0.17			0.17	0.17		0.46	0.46	0.69	0.69	
v/c Ratio		0.01			0.88	0.47		0.88	0.26	0.67	0.45	
Control Delay		0.0			74.9	8.9		35.6	3.0	22.8	7.5	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		0.0			74.9	8.9		35.6	3.0	22.8	7.5	
LOS		A			E	A		D	A	C	A	
Approach Delay					41.7			28.0			12.2	
Approach LOS					D			C			B	
Queue Length 50th (ft)		0			112	0		376	0	67	127	
Queue Length 95th (ft)		0			#234	58		#607	38	149	189	
Internal Link Dist (ft)		862			898			913			1101	
Turn Bay Length (ft)						135			320	415		
Base Capacity (vph)		379			233	440		858	850	383	1293	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.01			0.86	0.46		0.88	0.26	0.67	0.45	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 90												
Control Type: Actuated-Coordinated												

Timings

2: State Highway 83 & Stagecoach Road

Total Traffic Conditions
Year 2027 - PM Peak Hour

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 24.5

Intersection LOS: C

Intersection Capacity Utilization 98.6%

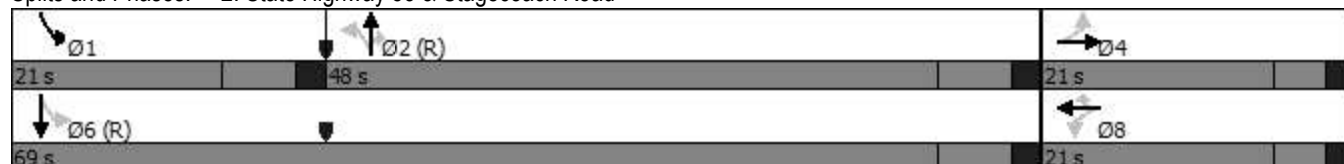
ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.






















Splits and Phases: 2: State Highway 83 & Stagecoach Road



Timings

3: State Highway 83 & North Gate Boulevard

Total Traffic Conditions
Year 2027 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	0	476	0	0	0	464	864	2	1	667	153
Future Volume (vph)	200	0	476	0	0	0	464	864	2	1	667	153
Satd. Flow (prot)	1770	1863	1583	0	1863	0	1770	3539	0	1770	3539	1583
Flt Permitted	0.757						0.226			0.304		
Satd. Flow (perm)	1410	1863	1583	0	1863	0	421	3539	0	566	3539	1583
Satd. Flow (RTOR)			493									166
Lane Group Flow (vph)	217	0	517	0	0	0	504	941	0	1	725	166
Turn Type	Perm		Perm				pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		10.0	12.0		11.0	11.0	11.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0		25.0	60.0		35.0	35.0	35.0
Total Split (%)	28.6%	28.6%	28.6%	28.6%	28.6%		29.8%	71.4%		41.7%	41.7%	41.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	5.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0		5.0	7.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effct Green (s)	15.9		15.9				55.1	53.1		29.0	29.0	29.0
Actuated g/C Ratio	0.19		0.19				0.67	0.65		0.35	0.35	0.35
v/c Ratio	0.79		0.73				0.82	0.41		0.01	0.58	0.25
Control Delay	53.2		10.8				25.0	7.9		18.0	24.2	4.4
Queue Delay	0.0		0.0				0.0	0.0		0.0	0.0	0.0
Total Delay	53.2		10.8				25.0	7.9		18.0	24.2	4.4
LOS	D		B				C	A		B	C	A
Approach Delay		23.3						13.9			20.5	
Approach LOS		C						B			C	
Queue Length 50th (ft)	107		10				141	117		0	163	0
Queue Length 95th (ft)	#208		106				#314	154		4	220	40
Internal Link Dist (ft)		997			136			1617			2154	
Turn Bay Length (ft)	225		285				900			750		730
Base Capacity (vph)	310		732				611	2289		200	1252	667
Starvation Cap Reductn	0		0				0	0		0	0	0
Spillback Cap Reductn	0		0				0	0		0	0	0
Storage Cap Reductn	0		0				0	0		0	0	0
Reduced v/c Ratio	0.70		0.71				0.82	0.41		0.01	0.58	0.25
Intersection Summary												
Cycle Length: 84												
Actuated Cycle Length: 82												
Natural Cycle: 60												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.82												

Timings

3: State Highway 83 & North Gate Boulevard

Total Traffic Conditions

Year 2027 - PM Peak Hour

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 69.4%






ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: State Highway 83 & North Gate Boulevard

 Ø2	 Ø4
60 s	24 s
 Ø5	 Ø8
25 s	24 s
 Ø6	
35 s	

Timings

4: State Highway 83 & Shoup Road

Total Traffic Conditions

Year 2027 - PM Peak Hour

	↑	↗	↘	↓	↙	↖
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↗	↘	↑↑	↙	↖
Traffic Volume (vph)	1315	324	212	1022	160	100
Future Volume (vph)	1315	324	212	1022	160	100
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.085			
Satd. Flow (perm)	3539	1583	158	3539	1863	1583
Satd. Flow (RTOR)		352				109
Lane Group Flow (vph)	1429	352	230	1111	174	109
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0	20.0	4.0	20.0	4.0	4.0
Minimum Split (s)	27.5	27.5	9.0	27.5	10.0	10.0
Total Split (s)	45.0	45.0	20.0	65.0	30.0	30.0
Total Split (%)	47.4%	47.4%	21.1%	68.4%	31.6%	31.6%
Yellow Time (s)	5.5	5.5	3.0	5.5	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	Max	Max	None	Max	None	None
Act Effect Green (s)	41.8	41.8	60.1	57.6	13.0	13.0
Actuated g/C Ratio	0.50	0.50	0.71	0.68	0.15	0.15
v/c Ratio	0.81	0.37	0.72	0.46	0.60	0.32
Control Delay	24.4	3.1	29.0	7.3	42.2	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	3.1	29.0	7.3	42.2	9.2
LOS	C	A	C	A	D	A
Approach Delay	20.2			11.0	29.5	
Approach LOS	C			B	C	
Queue Length 50th (ft)	318	0	61	121	87	0
Queue Length 95th (ft)	#561	49	145	196	149	42
Internal Link Dist (ft)	1042			1734	675	
Turn Bay Length (ft)		710	980			500
Base Capacity (vph)	1759	964	400	2422	532	530
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.37	0.57	0.46	0.33	0.21
Intersection Summary						
Cycle Length: 95						
Actuated Cycle Length: 84.1						
Natural Cycle: 60						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.81						

Timings

4: State Highway 83 & Shoup Road

Total Traffic Conditions

Year 2027 - PM Peak Hour

Intersection Signal Delay: 17.4

Intersection LOS: B

Intersection Capacity Utilization 72.4%

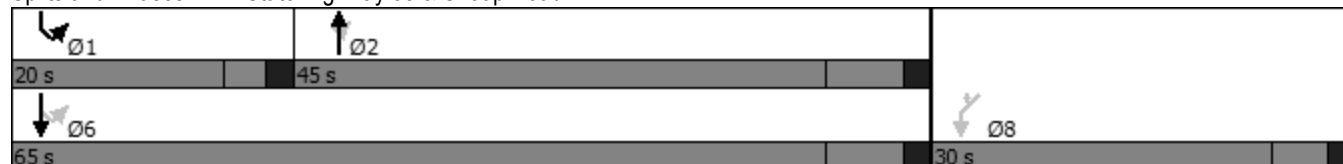
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

















Splits and Phases: 4: State Highway 83 & Shoup Road



Timings

5: Black Forest Road & Shoup Road

Total Traffic Conditions
Year 2027 - PM Peak Hour





												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	169	107	19	52	45	54	335	23	47	286	95
Future Volume (vph)	110	169	107	19	52	45	54	335	23	47	286	95
Satd. Flow (prot)	0	1769	0	0	1752	0	0	1835	0	0	1798	0
Flt Permitted		0.870			0.898			0.892			0.914	
Satd. Flow (perm)	0	1561	0	0	1586	0	0	1648	0	0	1651	0
Satd. Flow (RTOR)		23			37			5			25	
Lane Group Flow (vph)	0	420	0	0	127	0	0	448	0	0	465	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		18.0	18.0		18.0	18.0	
Total Split (s)	35.0	35.0		35.0	35.0		55.0	55.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		38.9%	38.9%		61.1%	61.1%		61.1%	61.1%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effect Green (s)		25.6			25.6			49.2			49.2	
Actuated g/C Ratio		0.29			0.29			0.57			0.57	
v/c Ratio		0.88			0.26			0.48			0.49	
Control Delay		48.7			17.6			14.0			13.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		48.7			17.6			14.0			13.6	
LOS		D			B			B			B	
Approach Delay		48.7			17.6			14.0			13.6	
Approach LOS		D			B			B			B	
Queue Length 50th (ft)		206			37			147			147	
Queue Length 95th (ft)		#363			79			228			230	
Internal Link Dist (ft)		965			1070			1292			16527	
Turn Bay Length (ft)												
Base Capacity (vph)		538			556			935			945	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.78			0.23			0.48			0.49	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 86.8												
Natural Cycle: 55												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.88												

Timings 5: Black Forest Road & Shoup Road

Total Traffic Conditions
Year 2027 - PM Peak Hour

Intersection Signal Delay: 24.2 Intersection LOS: C
Intersection Capacity Utilization 69.0% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Black Forest Road & Shoup Road

 Ø2 55 s	 Ø4 35 s
 Ø6 55 s	 Ø8 35 s

Intersection												
Int Delay, s/veh	10.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	↕
Traffic Vol, veh/h	93	2	188	2	2	2	249	129	0	6	129	116
Future Vol, veh/h	93	2	188	2	2	2	249	129	0	6	129	116
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	195	-	-	-	-	195
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	101	2	204	2	2	2	271	140	0	7	140	126

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	838	836	140	1002	962	140	266	0	0	140	0	0
Stage 1	154	154	-	682	682	-	-	-	-	-	-	-
Stage 2	684	682	-	320	280	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	286	303	908	221	256	908	1298	-	-	1443	-	-
Stage 1	848	770	-	440	450	-	-	-	-	-	-	-
Stage 2	439	450	-	692	679	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	237	238	908	142	201	908	1298	-	-	1443	-	-
Mov Cap-2 Maneuver	237	238	-	142	201	-	-	-	-	-	-	-
Stage 1	671	765	-	348	356	-	-	-	-	-	-	-
Stage 2	344	356	-	532	675	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	26.5		21.2		5.6		0.2	
HCM LOS	D		C					



















Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1298	-	-	466	229	1443	-
HCM Lane V/C Ratio	0.209	-	-	0.66	0.028	0.005	-
HCM Control Delay (s)	8.5	-	-	26.5	21.2	7.5	0
HCM Lane LOS	A	-	-	D	C	A	A
HCM 95th %tile Q(veh)	0.8	-	-	4.7	0.1	0	-

Timings

6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle

Total Traffic Conditions

Year 2027 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	2	188	2	2	2	249	129	0	6	129	116
Future Volume (vph)	93	2	188	2	2	2	249	129	0	6	129	116
Satd. Flow (prot)	0	1668	0	0	1750	0	1770	1863	0	0	1859	1583
Flt Permitted		0.888			0.898		0.520				0.987	
Satd. Flow (perm)	0	1505	0	0	1597	0	969	1863	0	0	1839	1583
Satd. Flow (RTOR)		172			2							155
Lane Group Flow (vph)	0	307	0	0	6	0	271	140	0	0	147	126
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	10.5	10.5		10.5	10.5		11.0	14.0		14.0	14.0	14.0
Total Split (s)	24.0	24.0		24.0	24.0		16.0	36.0		20.0	20.0	20.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		26.7%	60.0%		33.3%	33.3%	33.3%
Yellow Time (s)	3.5	3.5		3.5	3.5		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)		5.5			5.5		6.0	6.0			6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)		11.6			11.6		36.9	36.9			21.8	21.8
Actuated g/C Ratio		0.19			0.19		0.62	0.62			0.36	0.36
v/c Ratio		0.72			0.02		0.38	0.12			0.22	0.19
Control Delay		19.2			14.2		8.2	6.5			17.2	3.5
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		19.2			14.2		8.2	6.5			17.2	3.5
LOS		B			B		A	A			B	A
Approach Delay		19.2			14.2			7.6			10.9	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)		44			1		37	18			36	0
Queue Length 95th (ft)		100			8		96	51			88	26
Internal Link Dist (ft)		750			806			16527			4563	
Turn Bay Length (ft)							195					195
Base Capacity (vph)		583			493		734	1146			667	672
Starvation Cap Reductn		0			0		0	0			0	0
Spillback Cap Reductn		0			0		0	0			0	0
Storage Cap Reductn		0			0		0	0			0	0
Reduced v/c Ratio		0.53			0.01		0.37	0.12			0.22	0.19

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Timings

6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle

Total Traffic Conditions

Year 2027 - PM Peak Hour

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 12.1

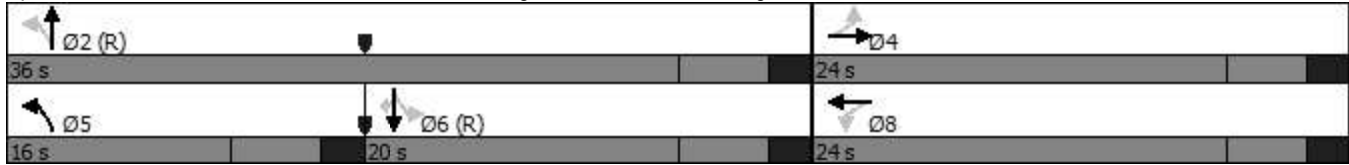
Intersection LOS: B

Intersection Capacity Utilization 57.5%

ICU Level of Service B










Analysis Period (min) 15

Splits and Phases: 6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle



HCM 6th TWSC
7: Ridge Run Road/Black Forest Road & Hodgen Road

Total Traffic Conditions
Year 2027 - PM Peak Hour

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	68	495	20	2	280	13	19	2	5	31	1	24
Future Vol, veh/h	68	495	20	2	280	13	19	2	5	31	1	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	400	-	335	280	-	-	-	-	-	65	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	74	538	22	2	304	14	21	2	5	34	1	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	318	0	0	560	0	0	1015	1008	538	1016	1023	311
Stage 1	-	-	-	-	-	-	686	686	-	315	315	-
Stage 2	-	-	-	-	-	-	329	322	-	701	708	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1242	-	-	1011	-	-	217	240	543	216	236	729
Stage 1	-	-	-	-	-	-	438	448	-	696	656	-
Stage 2	-	-	-	-	-	-	684	651	-	429	438	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1242	-	-	1011	-	-	199	225	543	202	221	729
Mov Cap-2 Maneuver	-	-	-	-	-	-	199	225	-	202	221	-
Stage 1	-	-	-	-	-	-	412	421	-	654	655	-
Stage 2	-	-	-	-	-	-	657	650	-	397	412	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			0.1			22.3			19.3		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	199	387	1242	-	-	1011	-	-	202	668
HCM Lane V/C Ratio	0.104	0.02	0.06	-	-	0.002	-	-	0.167	0.041
HCM Control Delay (s)	25.2	14.5	8.1	-	-	8.6	-	-	26.4	10.6
HCM Lane LOS	D	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.3	0.1	0.2	-	-	0	-	-	0.6	0.1

HCM 6th TWSC
8: Black Forest Road/Black Forrest Road & Hodgen Road

Total Traffic Conditions
Year 2027 - PM Peak Hour

Intersection												
Int Delay, s/veh	9.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↗			↕			↕	
Traffic Vol, veh/h	2	466	176	73	248	0	125	1	98	0	0	0
Future Vol, veh/h	2	466	176	73	248	0	125	1	98	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	260	290	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	507	191	79	270	0	136	1	107	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	270	0	0	698	0	0	939	939	507	1089	1130	270
Stage 1	-	-	-	-	-	-	511	511	-	428	428	-
Stage 2	-	-	-	-	-	-	428	428	-	661	702	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1293	-	-	898	-	-	244	264	566	193	204	769
Stage 1	-	-	-	-	-	-	545	537	-	605	585	-
Stage 2	-	-	-	-	-	-	605	585	-	452	440	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1293	-	-	898	-	-	227	240	566	145	185	769
Mov Cap-2 Maneuver	-	-	-	-	-	-	227	240	-	145	185	-
Stage 1	-	-	-	-	-	-	543	535	-	603	534	-
Stage 2	-	-	-	-	-	-	552	534	-	365	439	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.1			49.4			0		
HCM LOS							E			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	308	1293	-	-	898	-	-	-				
HCM Lane V/C Ratio	0.791	0.002	-	-	0.088	-	-	-				
HCM Control Delay (s)	49.4	7.8	0	-	9.4	-	-	0				
HCM Lane LOS	E	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	6.3	0	-	-	0.3	-	-	-				

HCM 6th Roundabout
9: Allen Ranch Road & Old Stagecoach Road

Total Traffic Conditions
Year 2027 - PM Peak Hour

Intersection			
Intersection Delay, s/veh	5.4		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	430	342	67
Demand Flow Rate, veh/h	439	349	69
Vehicles Circulating, veh/h	44	34	397
Vehicles Exiting, veh/h	339	432	86
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.8	5.0	4.7
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	439	349	69
Cap Entry Lane, veh/h	1319	1333	920
Entry HV Adj Factor	0.980	0.980	0.971
Flow Entry, veh/h	430	342	67
Cap Entry, veh/h	1293	1306	894
V/C Ratio	0.333	0.262	0.075
Control Delay, s/veh	5.8	5.0	4.7
LOS	A	A	A
95th %tile Queue, veh	1	1	0

























HCM 6th Roundabout
10: Shortwall Drive & Old Stagecoach Road & Stagecoach Road

Total Traffic Conditions
Year 2027 - PM Peak Hour

Intersection			
Intersection Delay, s/veh	5.6		
Intersection LOS	A		
Approach	WB	NB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	350	49	475
Demand Flow Rate, veh/h	357	50	484
Vehicles Circulating, veh/h	40	426	18
Vehicles Exiting, veh/h	436	76	379
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.1	4.6	6.0
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LR	LR
Assumed Moves	LR	LR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	357	50	484
Cap Entry Lane, veh/h	1325	894	1355
Entry HV Adj Factor	0.980	0.980	0.981
Flow Entry, veh/h	350	49	475
Cap Entry, veh/h	1299	876	1330
V/C Ratio	0.269	0.056	0.357
Control Delay, s/veh	5.1	4.6	6.0
LOS	A	A	A
95th %tile Queue, veh	1	0	2

Timings
1: State Highway 83 & Hodgen Road

Total Traffic Conditions
Year 2042 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	153	115	435	293	398	156	523	130	198	683	98
Future Volume (vph)	155	153	115	435	293	398	156	523	130	198	683	98
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1827	0
Flt Permitted	0.440			0.629			0.085			0.183		
Satd. Flow (perm)	820	1863	1583	1172	1863	1583	158	1863	1583	341	1827	0
Satd. Flow (RTOR)			125			267			141		7	
Lane Group Flow (vph)	168	166	125	473	318	433	170	568	141	215	849	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	35.0	35.0	6.0	35.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	14.0	12.0	42.0	42.0	12.0	42.0	
Total Split (s)	51.0	51.0	51.0	51.0	51.0	51.0	12.0	54.0	54.0	15.0	57.0	
Total Split (%)	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	10.0%	45.0%	45.0%	12.5%	47.5%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0	6.0	7.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	
Act Effct Green (s)	45.0	45.0	45.0	45.0	45.0	45.0	54.0	47.0	47.0	60.0	50.0	
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.45	0.39	0.39	0.50	0.42	
v/c Ratio	0.55	0.24	0.19	1.08	0.46	0.57	1.13	0.78	0.20	0.78	1.11	
Control Delay	37.7	26.9	5.0	102.0	30.9	14.0	136.5	40.8	4.5	37.1	100.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.7	26.9	5.0	102.0	30.9	14.0	136.5	40.8	4.5	37.1	100.6	
LOS	D	C	A	F	C	B	F	D	A	D	F	
Approach Delay		24.9			52.4			53.5			87.8	
Approach LOS		C			D			D			F	
Queue Length 50th (ft)	101	87	0	~408	184	94	~100	380	0	87	~751	
Queue Length 95th (ft)	179	141	39	#616	269	198	#244	528	40	#166	#1000	
Internal Link Dist (ft)		824			1611			1078			1286	
Turn Bay Length (ft)	420		420	350		350	120		650	525		
Base Capacity (vph)	307	698	671	439	698	760	151	729	705	277	765	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.55	0.24	0.19	1.08	0.46	0.57	1.13	0.78	0.20	0.78	1.11	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Natural Cycle: 110												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 1.13												

Timings

1: State Highway 83 & Hodgen Road

Total Traffic Conditions

Year 2042 - AM Peak Hour

Intersection Signal Delay: 59.6

Intersection LOS: E

Intersection Capacity Utilization 103.5%

ICU Level of Service G

Analysis Period (min) 15







~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.









Queue shown is maximum after two cycles.

Splits and Phases: 1: State Highway 83 & Hodgen Road

 Ø1	 Ø2	 Ø4
15 s	54 s	51 s
 Ø5	 Ø6	 Ø8
12 s	57 s	51 s

HCM 6th TWSC
2: State Highway 83 & Stagecoach Road




















Total Traffic Conditions
Year 2042 - AM Peak Hour

Intersection												
Int Delay, s/veh	59.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	2	7	155	0	154	0	675	130	96	1132	2
Future Vol, veh/h	2	2	7	155	0	154	0	675	130	96	1132	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	135	-	-	320	415	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	2	8	168	0	167	0	734	141	104	1230	2
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1806	2314	616	1558	2174	367	1232	0	0	875	0	0
Stage 1	1439	1439	-	734	734	-	-	-	-	-	-	-
Stage 2	367	875	-	824	1440	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	50	37	433	~ 76	46	630	561	-	-	767	-	-
Stage 1	140	197	-	378	424	-	-	-	-	-	-	-
Stage 2	625	365	-	333	196	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	33	32	433	~ 64	40	630	561	-	-	767	-	-
Mov Cap-2 Maneuver	33	32	-	~ 64	40	-	-	-	-	-	-	-
Stage 1	140	170	-	378	424	-	-	-	-	-	-	-
Stage 2	459	365	-	279	169	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	58.5		\$ 446.5		0		0.8					
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	561	-	-	79 64 630	767	-	-					
HCM Lane V/C Ratio	-	-	-	0.151 2.632 0.266	0.136	-	-					
HCM Control Delay (s)	0	-	-	58.5\$ 877.5 12.8	10.4	-	-					
HCM Lane LOS	A	-	-	F F B B	-	-	-					
HCM 95th %tile Q(veh)	0	-	-	0.5 16.8 1.1	0.5	-	-					
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Timings

2: State Highway 83 & Stagecoach Road

Total Traffic Conditions
Year 2042 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	2	7	155	0	154	0	675	130	96	1132	2
Future Volume (vph)	2	2	7	155	0	154	0	675	130	96	1132	2
Satd. Flow (prot)	0	1682	0	0	1770	1583	0	3539	1583	1770	3539	0
Flt Permitted		0.942			0.750					0.278		
Satd. Flow (perm)	0	1597	0	0	1397	1583	0	3539	1583	518	3539	0
Satd. Flow (RTOR)		8				167			141			
Lane Group Flow (vph)	0	12	0	0	168	167	0	734	141	104	1232	0
Turn Type	Perm	NA		Perm	NA	Perm		NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2		2	6		
Detector Phase	4	4		8	8	8	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	35.0	35.0	35.0	14.0	35.0	
Minimum Split (s)	13.5	13.5		13.5	13.5	13.5	42.0	42.0	42.0	21.0	42.0	
Total Split (s)	17.0	17.0		17.0	17.0	17.0	42.0	42.0	42.0	21.0	63.0	
Total Split (%)	21.3%	21.3%		21.3%	21.3%	21.3%	52.5%	52.5%	52.5%	26.3%	78.8%	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.5			5.5	5.5		7.0	7.0	7.0	7.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Act Effect Green (s)		11.3			11.3	11.3		39.4	39.4	56.2	56.2	
Actuated g/C Ratio		0.14			0.14	0.14		0.49	0.49	0.70	0.70	
v/c Ratio		0.05			0.86	0.46		0.42	0.17	0.18	0.50	
Control Delay		21.0			71.7	10.0		15.5	3.2	4.6	6.3	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		21.0			71.7	10.0		15.5	3.2	4.6	6.3	
LOS		C			E	A		B	A	A	A	
Approach Delay		21.0			40.9			13.5			6.2	
Approach LOS		C			D			B			A	
Queue Length 50th (ft)		2			83	0		132	0	14	124	
Queue Length 95th (ft)		16			#190	52		180	30	27	163	
Internal Link Dist (ft)		862			898			913			1101	
Turn Bay Length (ft)						135			320	415		
Base Capacity (vph)		236			200	370		1743	851	582	2487	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.05			0.84	0.45		0.42	0.17	0.18	0.50	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												

Timings 2: State Highway 83 & Stagecoach Road

Total Traffic Conditions
Year 2042 - AM Peak Hour

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 13.3

Intersection LOS: B

Intersection Capacity Utilization 92.0%







ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.























Splits and Phases: 2: State Highway 83 & Stagecoach Road

 Ø1	 Ø2 (R)	 Ø4
21 s	42 s	17 s
 Ø6 (R)	 Ø7	 Ø8
63 s		17 s

Timings

3: State Highway 83 & North Gate Boulevard

Total Traffic Conditions
Year 2042 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	0	582	0	0	0	934	748	0	0	1297	279
Future Volume (vph)	114	0	582	0	0	0	934	748	0	0	1297	279
Satd. Flow (prot)	1770	1863	1583	0	1863	0	1770	3539	1863	1863	3539	1583
Flt Permitted	0.757						0.125					
Satd. Flow (perm)	1410	1863	1583	0	1863	0	233	3539	1863	1863	3539	1583
Satd. Flow (RTOR)			593									235
Lane Group Flow (vph)	124	0	633	0	0	0	1015	813	0	0	1410	303
Turn Type	Perm		Perm				pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2		2	6		6
Detector Phase	4	4	4	8	8		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		10.0	12.0	12.0	11.0	11.0	11.0
Total Split (s)	13.0	13.0	13.0	13.0	13.0		37.0	71.0	71.0	34.0	34.0	34.0
Total Split (%)	15.5%	15.5%	15.5%	15.5%	15.5%		44.0%	84.5%	84.5%	40.5%	40.5%	40.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	5.0	5.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0		5.0	7.0	7.0	6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	Max
Act Effct Green (s)	7.0		7.0				66.0	64.0			28.0	28.0
Actuated g/C Ratio	0.08		0.08				0.79	0.76			0.33	0.33
v/c Ratio	1.06		0.94				1.32	0.30			1.20	0.44
Control Delay	141.2		28.8				176.2	3.4			124.6	7.9
Queue Delay	0.0		0.0				0.0	0.0			0.0	0.0
Total Delay	141.2		28.8				176.2	3.4			124.6	7.9
LOS	F		C				F	A			F	A
Approach Delay		47.3						99.3			104.0	
Approach LOS		D						F			F	
Queue Length 50th (ft)	~73		20				~653	53			~480	25
Queue Length 95th (ft)	#179		#216				#889	72			#610	86
Internal Link Dist (ft)		997			136			1617			2154	
Turn Bay Length (ft)	225		285				900					730
Base Capacity (vph)	117		675				768	2696			1179	684
Starvation Cap Reductn	0		0				0	0			0	0
Spillback Cap Reductn	0		0				0	0			0	0
Storage Cap Reductn	0		0				0	0			0	0
Reduced v/c Ratio	1.06		0.94				1.32	0.30			1.20	0.44
Intersection Summary												
Cycle Length: 84												
Actuated Cycle Length: 84												
Natural Cycle: 140												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 1.32												

Timings 3: State Highway 83 & North Gate Boulevard

Total Traffic Conditions
Year 2042 - AM Peak Hour

Intersection Signal Delay: 92.0

Intersection LOS: F

Intersection Capacity Utilization 108.1%

ICU Level of Service G

Analysis Period (min) 15






~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: State Highway 83 & North Gate Boulevard

			
71 s		13 s	
			
37 s	34 s	13 s	

Timings
4: State Highway 83 & Shoup Road

Total Traffic Conditions
Year 2042 - AM Peak Hour





	↑	↗	↘	↓	↙	↖
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑↑	↗	↘	↑↑↑	↙	↖
Traffic Volume (vph)	1474	191	126	1806	544	372
Future Volume (vph)	1474	191	126	1806	544	372
Satd. Flow (prot)	5085	1583	1770	5085	1770	1583
Flt Permitted			0.099			
Satd. Flow (perm)	5085	1583	184	5085	1863	1583
Satd. Flow (RTOR)		208				137
Lane Group Flow (vph)	1602	208	137	1963	591	404
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0	20.0	4.0	20.0	4.0	4.0
Minimum Split (s)	27.5	27.5	9.0	27.5	10.0	10.0
Total Split (s)	43.0	43.0	10.0	53.0	42.0	42.0
Total Split (%)	45.3%	45.3%	10.5%	55.8%	44.2%	44.2%
Yellow Time (s)	5.5	5.5	3.0	5.5	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	Max	Max	None	Max	None	None
Act Effect Green (s)	35.6	35.6	48.1	45.6	32.3	32.3
Actuated g/C Ratio	0.39	0.39	0.53	0.50	0.35	0.35
v/c Ratio	0.81	0.28	0.75	0.77	0.90	0.62
Control Delay	29.6	4.1	39.9	22.1	46.2	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	4.1	39.9	22.1	46.2	20.2
LOS	C	A	D	C	D	C
Approach Delay	26.7			23.2	35.7	
Approach LOS	C			C	D	
Queue Length 50th (ft)	318	0	42	354	319	124
Queue Length 95th (ft)	380	44	#126	419	#506	222
Internal Link Dist (ft)	1042			1734	675	
Turn Bay Length (ft)		710	980			500
Base Capacity (vph)	1978	742	183	2535	734	707
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.28	0.75	0.77	0.81	0.57
Intersection Summary						
Cycle Length: 95						
Actuated Cycle Length: 91.5						
Natural Cycle: 80						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.90						

Timings 4: State Highway 83 & Shoup Road

Total Traffic Conditions
Year 2042 - AM Peak Hour

Intersection Signal Delay: 27.0 Intersection LOS: C
Intersection Capacity Utilization 81.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

















Splits and Phases: 4: State Highway 83 & Shoup Road

 Ø1 10 s	 Ø2 43 s		 Ø8 42 s
 Ø6 53 s			

Timings

5: Black Forest Road & Shoup Road

Total Traffic Conditions
Year 2042 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	96	70	25	199	30	152	316	16	33	368	205
Future Volume (vph)	123	96	70	25	199	30	152	316	16	33	368	205
Satd. Flow (prot)	0	1763	0	0	1824	0	0	1827	0	0	1772	0
Flt Permitted		0.646			0.947			0.621			0.954	
Satd. Flow (perm)	0	1164	0	0	1736	0	0	1152	0	0	1695	0
Satd. Flow (RTOR)		19			8			3			45	
Lane Group Flow (vph)	0	314	0	0	276	0	0	525	0	0	659	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		18.0	18.0		18.0	18.0	
Total Split (s)	35.0	35.0		35.0	35.0		55.0	55.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		38.9%	38.9%		61.1%	61.1%		61.1%	61.1%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effect Green (s)		24.8			24.8			49.2			49.2	
Actuated g/C Ratio		0.29			0.29			0.57			0.57	
v/c Ratio		0.90			0.55			0.80			0.67	
Control Delay		57.4			29.2			27.1			16.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		57.4			29.2			27.1			16.9	
LOS		E			C			C			B	
Approach Delay		57.4			29.2			27.1			16.9	
Approach LOS		E			C			C			B	
Queue Length 50th (ft)		153			121			228			236	
Queue Length 95th (ft)		#297			197			#446			373	
Internal Link Dist (ft)		965			1070			1292			16527	
Turn Bay Length (ft)												
Base Capacity (vph)		406			592			659			988	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.77			0.47			0.80			0.67	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 86												
Natural Cycle: 60												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.90												

Timings
5: Black Forest Road & Shoup Road

Total Traffic Conditions
Year 2042 - AM Peak Hour

Intersection Signal Delay: 29.0

Intersection LOS: C

Intersection Capacity Utilization 109.5%





ICU Level of Service H

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: Black Forest Road & Shoup Road

 Ø2	 Ø4
55 s	35 s
 Ø6	 Ø8
55 s	35 s

HCM 6th TWSC
6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle

Total Traffic Conditions
Year 2042 - AM Peak Hour

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	↕
Traffic Vol, veh/h	74	0	150	9	2	4	105	150	2	2	206	52
Future Vol, veh/h	74	0	150	9	2	4	105	150	2	2	206	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	195	-	-	-	-	195
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	80	0	163	10	2	4	114	163	2	2	224	57

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	623	621	224	730	677	164	281	0	0	165	0	0
Stage 1	228	228	-	392	392	-	-	-	-	-	-	-
Stage 2	395	393	-	338	285	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	398	403	815	338	375	881	1282	-	-	1413	-	-
Stage 1	775	715	-	633	606	-	-	-	-	-	-	-
Stage 2	630	606	-	676	676	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	367	366	815	251	341	881	1282	-	-	1413	-	-
Mov Cap-2 Maneuver	367	366	-	251	341	-	-	-	-	-	-	-
Stage 1	706	714	-	577	552	-	-	-	-	-	-	-
Stage 2	569	552	-	540	675	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.6		16.7		3.3		0.1	
HCM LOS	C		C					



















Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1282	-	-	581	324	1413	-
HCM Lane V/C Ratio	0.089	-	-	0.419	0.05	0.002	-
HCM Control Delay (s)	8.1	-	-	15.6	16.7	7.6	0
HCM Lane LOS	A	-	-	C	C	A	A
HCM 95th %tile Q(veh)	0.3	-	-	2.1	0.2	0	-

Timings

6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle

Total Traffic Conditions

Year 2042 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	0	150	9	2	4	105	150	2	2	206	52
Future Volume (vph)	74	0	150	9	2	4	105	150	2	2	206	52
Satd. Flow (prot)	0	1666	0	0	1745	0	1770	1859	0	0	1863	1583
Flt Permitted		0.884			0.720		0.506				0.998	
Satd. Flow (perm)	0	1497	0	0	1296	0	943	1859	0	0	1859	1583
Satd. Flow (RTOR)		164			4			2				155
Lane Group Flow (vph)	0	243	0	0	16	0	114	165	0	0	226	57
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	8.0		8.0	8.0	8.0
Minimum Split (s)	10.5	10.5		10.5	10.5		11.0	14.0		14.0	14.0	14.0
Total Split (s)	23.0	23.0		23.0	23.0		12.0	37.0		25.0	25.0	25.0
Total Split (%)	38.3%	38.3%		38.3%	38.3%		20.0%	61.7%		41.7%	41.7%	41.7%
Yellow Time (s)	3.5	3.5		3.5	3.5		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)		5.5			5.5		6.0	6.0			6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)		9.5			9.5		39.0	39.0			28.5	28.5
Actuated g/C Ratio		0.16			0.16		0.65	0.65			0.48	0.48
v/c Ratio		0.65			0.08		0.16	0.14			0.26	0.07
Control Delay		16.7			17.2		5.6	5.3			13.3	0.2
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		16.7			17.2		5.6	5.3			13.3	0.2
LOS		B			B		A	A			B	A
Approach Delay		16.7			17.2			5.4			10.7	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)		26			4		12	18			48	0
Queue Length 95th (ft)		76			16		38	51			114	0
Internal Link Dist (ft)		750			806			16527			4848	
Turn Bay Length (ft)							195					195
Base Capacity (vph)		552			380		708	1209			881	832
Starvation Cap Reductn		0			0		0	0			0	0
Spillback Cap Reductn		0			0		0	0			0	0
Storage Cap Reductn		0			0		0	0			0	0
Reduced v/c Ratio		0.44			0.04		0.16	0.14			0.26	0.07
Intersection Summary												
Cycle Length: 60												
Actuated Cycle Length: 60												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 40												
Control Type: Actuated-Coordinated												

Timings

6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle

Total Traffic Conditions

Year 2042 - AM Peak Hour

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 10.8






Intersection LOS: B

Intersection Capacity Utilization 47.5%

ICU Level of Service A

Analysis Period (min) 15






















Splits and Phases: 6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle

 Ø2 (R)		 Ø4	
37 s		23 s	
 Ø5		 Ø8	
12 s	 Ø6 (R)	25 s	23 s

Timings

7: Black Forest Road & Hodgen Road

Total Traffic Conditions
Year 2042 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	282	161	134	809	20	258	0	96	20	0	76
Future Volume (vph)	22	282	161	134	809	20	258	0	96	20	0	76
Satd. Flow (prot)	1770	1863	1583	1770	1855	0	1770	1583	0	1770	1583	0
Flt Permitted	0.108			0.486			0.703			0.690		
Satd. Flow (perm)	201	1863	1583	905	1855	0	1310	1583	0	1285	1583	0
Satd. Flow (RTOR)			175		2			574			215	
Lane Group Flow (vph)	24	307	175	146	901	0	280	104	0	22	83	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	11.0	18.0	18.0	11.0	18.0		14.0	14.0		14.0	14.0	
Total Split (s)	11.0	54.0	54.0	11.0	54.0		25.0	25.0		25.0	25.0	
Total Split (%)	12.2%	60.0%	60.0%	12.2%	60.0%		27.8%	27.8%		27.8%	27.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Act Effct Green (s)	38.1	33.0	33.0	42.2	40.5		19.5	19.5		19.5	19.5	
Actuated g/C Ratio	0.50	0.43	0.43	0.55	0.53		0.26	0.26		0.26	0.26	
v/c Ratio	0.12	0.38	0.22	0.26	0.91		0.84	0.12		0.07	0.15	
Control Delay	7.2	15.0	2.5	7.9	31.9		54.2	0.3		27.7	0.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.2	15.0	2.5	7.9	31.9		54.2	0.3		27.7	0.6	
LOS	A	B	A	A	C		D	A		C	A	
Approach Delay		10.3			28.5			39.6			6.2	
Approach LOS		B			C			D			A	
Queue Length 50th (ft)	4	92	0	28	304		122	0		8	0	
Queue Length 95th (ft)	12	144	29	49	#716		#324	0		30	0	
Internal Link Dist (ft)		1250			847			4848			905	
Turn Bay Length (ft)	400		335	280			125			65		
Base Capacity (vph)	206	1207	1087	560	1202		335	833		329	565	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.12	0.25	0.16	0.26	0.75		0.84	0.12		0.07	0.15	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 76.1												
Natural Cycle: 90												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.91												

Timings

7: Black Forest Road & Hodgen Road

Total Traffic Conditions

Year 2042 - AM Peak Hour

Intersection Signal Delay: 24.9

Intersection LOS: C

Intersection Capacity Utilization 83.9%







ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.




Queue shown is maximum after two cycles.

Splits and Phases: 7: Black Forest Road & Hodgen Road

 Ø2	 Ø3	 Ø4
25 s	11 s	54 s
 Ø6	 Ø7	 Ø8
25 s	11 s	54 s

HCM 6th TWSC
8: Hodgen Road & Black Forrest Road

Total Traffic Conditions
Year 2042 - AM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	465	1141	2	0	4
Future Vol, veh/h	4	465	1141	2	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	505	1240	2	0	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1242	0	-	0	1754	1241
Stage 1	-	-	-	-	1241	-
Stage 2	-	-	-	-	513	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	561	-	-	-	94	213
Stage 1	-	-	-	-	273	-
Stage 2	-	-	-	-	601	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	561	-	-	-	93	213
Mov Cap-2 Maneuver	-	-	-	-	93	-
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	601	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		22.3		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	561	-	-	-	213	
HCM Lane V/C Ratio	0.008	-	-	-	0.02	
HCM Control Delay (s)	11.5	0	-	-	22.3	
HCM Lane LOS	B	A	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

HCM 6th Roundabout
9: Allen Ranch Road & Old Stagecoach Road

Total Traffic Conditions
Year 2042 - AM Peak Hour

Intersection			
Intersection Delay, s/veh	4.3		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	186	294	58
Demand Flow Rate, veh/h	190	299	60
Vehicles Circulating, veh/h	23	27	164
Vehicles Exiting, veh/h	303	197	48
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.9	4.6	3.6
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	190	299	60
Cap Entry Lane, veh/h	1348	1342	1167
Entry HV Adj Factor	0.978	0.982	0.967
Flow Entry, veh/h	186	294	58
Cap Entry, veh/h	1318	1318	1128
V/C Ratio	0.141	0.223	0.051
Control Delay, s/veh	3.9	4.6	3.6
LOS	A	A	A
95th %tile Queue, veh	0	1	0

























HCM 6th Roundabout
10: Shortwall Drive & Old Stagecoach Road & Stagecoach Road

Total Traffic Conditions
Year 2042 - AM Peak Hour

Intersection			
Intersection Delay, s/veh	4.3		
Intersection LOS	A		
Approach	WB	NB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	272	75	222
Demand Flow Rate, veh/h	277	77	227
Vehicles Circulating, veh/h	47	184	5
Vehicles Exiting, veh/h	214	48	319
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.6	3.8	4.0
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LR	LR
Assumed Moves	LR	LR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	277	77	227
Cap Entry Lane, veh/h	1315	1144	1373
Entry HV Adj Factor	0.982	0.974	0.978
Flow Entry, veh/h	272	75	222
Cap Entry, veh/h	1292	1114	1343
V/C Ratio	0.211	0.067	0.165
Control Delay, s/veh	4.6	3.8	4.0
LOS	A	A	A
95th %tile Queue, veh	1	0	1

Timings
1: State Highway 83 & Hodgen Road

Total Traffic Conditions
Year 2042 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	359	248	199	203	290	213	677	305	412	675	108
Future Volume (vph)	47	359	248	199	203	290	213	677	305	412	675	108
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1824	0
Flt Permitted	0.531			0.298			0.095			0.083		
Satd. Flow (perm)	989	1863	1583	555	1863	1583	177	1863	1583	155	1824	0
Satd. Flow (RTOR)			242			315			174		9	
Lane Group Flow (vph)	51	390	270	216	221	315	232	736	332	448	851	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	35.0	35.0	6.0	35.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	14.0	12.0	42.0	42.0	12.0	42.0	
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	12.0	49.0	49.0	27.0	64.0	
Total Split (%)	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%	10.0%	40.8%	40.8%	22.5%	53.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0	6.0	7.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	
Act Effct Green (s)	38.0	38.0	38.0	38.0	38.0	38.0	49.0	42.0	42.0	70.0	57.0	
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32	0.32	0.41	0.35	0.35	0.58	0.48	
v/c Ratio	0.16	0.66	0.41	1.23	0.38	0.44	1.54	1.13	0.50	1.20	0.98	
Control Delay	31.4	41.9	7.4	181.3	34.1	5.4	296.3	113.1	16.8	146.2	56.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	31.4	41.9	7.4	181.3	34.1	5.4	296.3	113.1	16.8	146.2	56.7	
LOS	C	D	A	F	C	A	F	F	B	F	E	
Approach Delay		28.0			64.4			121.2			87.5	
Approach LOS		C			E			F			F	
Queue Length 50th (ft)	28	260	15	~207	132	0	~201	~661	91	~371	625	
Queue Length 95th (ft)	61	372	80	#363	204	64	#365	#896	179	#579	#914	
Internal Link Dist (ft)		824			1611			1078			1286	
Turn Bay Length (ft)	420		420	350		350	120		650	525		
Base Capacity (vph)	313	589	666	175	589	716	151	652	667	373	871	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.16	0.66	0.41	1.23	0.38	0.44	1.54	1.13	0.50	1.20	0.98	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Natural Cycle: 140												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 1.54												

Timings

1: State Highway 83 & Hodgen Road

Total Traffic Conditions

Year 2042 - PM Peak Hour

Intersection Signal Delay: 83.6

Intersection LOS: F

Intersection Capacity Utilization 109.2%

ICU Level of Service H

Analysis Period (min) 15







~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.








Splits and Phases: 1: State Highway 83 & Hodgen Road

 Ø1		 Ø2		 Ø4	
27 s		49 s		44 s	
 Ø5	 Ø6			 Ø8	
12 s	64 s			44 s	

HCM 6th TWSC

2: State Highway 83 & Stagecoach Road




















Total Traffic Conditions
Year 2042 - PM Peak Hour

Intersection												
Int Delay, s/veh	462.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	5	198	5	190	2	1075	215	237	825	0
Future Vol, veh/h	2	0	5	198	5	190	2	1075	215	237	825	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	135	-	-	320	415	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	5	215	5	207	2	1168	234	258	897	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2004	2819	449	2137	2585	584	897	0	0	1402	0	0
Stage 1	1413	1413	-	1172	1172	-	-	-	-	-	-	-
Stage 2	591	1406	-	965	1413	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	35	18	557	~ 28	25	455	753	-	-	483	-	-
Stage 1	145	202	-	~ 204	264	-	-	-	-	-	-	-
Stage 2	460	204	-	274	202	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	7	8	557	~ 16	11	455	753	-	-	483	-	-
Mov Cap-2 Maneuver	7	8	-	~ 16	11	-	-	-	-	-	-	-
Stage 1	143	94	-	~ 201	260	-	-	-	-	-	-	-
Stage 2	243	201	-	~ 126	94	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	213.5		\$ 3221.7		0.1		4.6					
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	753	-	-	24 16 455	483	-	-					
HCM Lane V/C Ratio	0.003	-	-	0.317 13.791 0.454	0.533	-	-					
HCM Control Delay (s)	9.8	0.1	-	213.5\$ 6219 19.3	20.7	-	-					
HCM Lane LOS	A	A	-	F F C	C	-	-					
HCM 95th %tile Q(veh)	0	-	-	1 28.5 2.3	3.1	-	-					
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Timings

2: State Highway 83 & Stagecoach Road

Total Traffic Conditions
Year 2042 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	5	198	5	190	2	1075	215	237	825	0
Future Volume (vph)	2	0	5	198	5	190	2	1075	215	237	825	0
Satd. Flow (prot)	0	1660	0	0	1775	1583	0	3539	1583	1770	3539	0
Flt Permitted		0.897			0.726			0.954		0.107		
Satd. Flow (perm)	0	1510	0	0	1352	1583	0	3376	1583	199	3539	0
Satd. Flow (RTOR)		150				207			234			
Lane Group Flow (vph)	0	7	0	0	220	207	0	1170	234	258	897	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2		2	6		
Detector Phase	4	4		8	8	8	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	35.0	35.0	35.0	14.0	35.0	
Minimum Split (s)	13.5	13.5		13.5	13.5	13.5	42.0	42.0	42.0	21.0	42.0	
Total Split (s)	17.0	17.0		17.0	17.0	17.0	42.0	42.0	42.0	21.0	63.0	
Total Split (%)	21.3%	21.3%		21.3%	21.3%	21.3%	52.5%	52.5%	52.5%	26.3%	78.8%	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.5			5.5	5.5		7.0	7.0	7.0	7.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Act Effect Green (s)		11.5			11.5	11.5		35.0	35.0	56.0	56.0	
Actuated g/C Ratio		0.14			0.14	0.14		0.44	0.44	0.70	0.70	
v/c Ratio		0.02			1.13	0.51		0.79	0.28	0.62	0.36	
Control Delay		0.2			140.5	9.9		24.3	3.1	19.3	5.3	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		0.2			140.5	9.9		24.3	3.1	19.3	5.3	
LOS		A			F	A		C	A	B	A	
Approach Delay		0.2			77.2			20.7			8.4	
Approach LOS		A			E			C			A	
Queue Length 50th (ft)		0			~130	0		255	0	58	78	
Queue Length 95th (ft)		0			#263	57		337	38	135	105	
Internal Link Dist (ft)		862			898			913			1101	
Turn Bay Length (ft)						135			320	415		
Base Capacity (vph)		345			194	404		1477	824	414	2477	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.02			1.13	0.51		0.79	0.28	0.62	0.36	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												

Timings

2: State Highway 83 & Stagecoach Road

Total Traffic Conditions
Year 2042 - PM Peak Hour

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 24.0

Intersection LOS: C

Intersection Capacity Utilization 93.1%

ICU Level of Service F

Analysis Period (min) 15







~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.























Splits and Phases: 2: State Highway 83 & Stagecoach Road

 Ø1	 Ø2 (R)	 Ø4
21 s	42 s	17 s
 Ø6 (R)	 Ø8	 Ø8
63 s		17 s

Timings

3: State Highway 83 & North Gate Boulevard

Total Traffic Conditions
Year 2042 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	268	0	742	0	0	0	722	1285	4	2	989	204
Future Volume (vph)	268	0	742	0	0	0	722	1285	4	2	989	204
Satd. Flow (prot)	1770	1863	1583	0	1863	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.757						0.154			0.192		
Satd. Flow (perm)	1410	1863	1583	0	1863	0	287	3539	1583	358	3539	1583
Satd. Flow (RTOR)			625						39			222
Lane Group Flow (vph)	291	0	807	0	0	0	785	1397	4	2	1075	222
Turn Type	Perm		Perm				pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2		2	6		6
Detector Phase	4	4	4	8	8		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		10.0	12.0	12.0	11.0	11.0	11.0
Total Split (s)	23.0	23.0	23.0	23.0	23.0		33.0	61.0	61.0	28.0	28.0	28.0
Total Split (%)	27.4%	27.4%	27.4%	27.4%	27.4%		39.3%	72.6%	72.6%	33.3%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	5.0	5.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0		5.0	7.0	7.0	6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	Max
Act Effct Green (s)	17.0		17.0				56.0	54.0	54.0	22.0	22.0	22.0
Actuated g/C Ratio	0.20		0.20				0.67	0.64	0.64	0.26	0.26	0.26
v/c Ratio	1.02		0.99				1.15	0.61	0.00	0.02	1.16	0.38
Control Delay	94.9		38.3				104.9	10.3	0.0	24.0	115.0	5.9
Queue Delay	0.0		0.0				0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.9		38.3				104.9	10.3	0.0	24.0	115.0	5.9
LOS	F		D				F	B	A	C	F	A
Approach Delay		53.3						44.3			96.2	
Approach LOS		D						D			F	
Queue Length 50th (ft)	~159		105				~439	203	0	1	~357	0
Queue Length 95th (ft)	#317		#373				#658	262	0	6	#480	51
Internal Link Dist (ft)		997			136			1617			2154	
Turn Bay Length (ft)	225		285				900		400	750		730
Base Capacity (vph)	285		818				685	2275	1031	93	926	578
Starvation Cap Reductn	0		0				0	0	0	0	0	0
Spillback Cap Reductn	0		0				0	0	0	0	0	0
Storage Cap Reductn	0		0				0	0	0	0	0	0
Reduced v/c Ratio	1.02		0.99				1.15	0.61	0.00	0.02	1.16	0.38

Intersection Summary

Cycle Length: 84

Actuated Cycle Length: 84

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.16

Timings 3: State Highway 83 & North Gate Boulevard

Total Traffic Conditions
Year 2042 - PM Peak Hour

Intersection Signal Delay: 61.2

Intersection LOS: E

Intersection Capacity Utilization 96.4%

ICU Level of Service F

Analysis Period (min) 15






~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: State Highway 83 & North Gate Boulevard

 Ø2 61 s		 Ø4 23 s	
 Ø5 33 s	 Ø6 28 s	 Ø8 23 s	

Timings

4: State Highway 83 & Shoup Road

Total Traffic Conditions

Year 2042 - PM Peak Hour

	↑	↗	↘	↓	↙	↖
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑↑	↗	↘	↑↑↑	↘	↗
Traffic Volume (vph)	1984	484	331	1542	232	155
Future Volume (vph)	1984	484	331	1542	232	155
Satd. Flow (prot)	5085	1583	1770	5085	1770	1583
Flt Permitted			0.081			
Satd. Flow (perm)	5085	1583	151	5085	1863	1583
Satd. Flow (RTOR)		526				168
Lane Group Flow (vph)	2157	526	360	1676	252	168
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0	20.0	4.0	20.0	4.0	4.0
Minimum Split (s)	27.5	27.5	9.0	27.5	10.0	10.0
Total Split (s)	51.0	51.0	23.0	74.0	21.0	21.0
Total Split (%)	53.7%	53.7%	24.2%	77.9%	22.1%	22.1%
Yellow Time (s)	5.5	5.5	3.0	5.5	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	Max	Max	None	Max	None	None
Act Effect Green (s)	44.5	44.5	69.0	66.5	14.6	14.6
Actuated g/C Ratio	0.47	0.47	0.73	0.70	0.15	0.15
v/c Ratio	0.90	0.51	0.90	0.47	0.88	0.44
Control Delay	30.0	3.4	51.1	6.8	69.6	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	3.4	51.1	6.8	69.6	9.7
LOS	C	A	D	A	E	A
Approach Delay	24.8			14.6	45.6	
Approach LOS	C			B	D	
Queue Length 50th (ft)	433	0	156	143	150	0
Queue Length 95th (ft)	#526	55	#314	171	#284	55
Internal Link Dist (ft)	1042			1734	675	
Turn Bay Length (ft)		710	980			500
Base Capacity (vph)	2394	1023	418	3573	295	392
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.51	0.86	0.47	0.85	0.43
Intersection Summary						
Cycle Length: 95						
Actuated Cycle Length: 94.6						
Natural Cycle: 80						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.90						

Timings

4: State Highway 83 & Shoup Road

Total Traffic Conditions

Year 2042 - PM Peak Hour

Intersection Signal Delay: 22.5

Intersection LOS: C

Intersection Capacity Utilization 84.9%





ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

















Splits and Phases: 4: State Highway 83 & Shoup Road

 Ø1	 Ø2	
23 s	51 s	
 Ø6		 Ø8
74 s		21 s

Timings

5: Black Forest Road & Shoup Road

Total Traffic Conditions
Year 2042 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	264	166	29	81	49	85	436	36	57	377	131
Future Volume (vph)	150	264	166	29	81	49	85	436	36	57	377	131
Satd. Flow (prot)	0	1767	0	0	1770	0	0	1831	0	0	1796	0
Flt Permitted		0.863			0.856			0.771			0.876	
Satd. Flow (perm)	0	1545	0	0	1529	0	0	1423	0	0	1581	0
Satd. Flow (RTOR)		29			32			5			20	
Lane Group Flow (vph)	0	630	0	0	173	0	0	605	0	0	614	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		18.0	18.0		18.0	18.0	
Total Split (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	
Total Split (%)	52.2%	52.2%		52.2%	52.2%		47.8%	47.8%		47.8%	47.8%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		36.8			36.8			37.2			37.2	
Actuated g/C Ratio		0.43			0.43			0.43			0.43	
v/c Ratio		0.93			0.26			0.98			0.88	
Control Delay		44.5			13.5			59.2			40.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		44.5			13.5			59.2			40.0	
LOS		D			B			E			D	
Approach Delay		44.5			13.5			59.2			40.0	
Approach LOS		D			B			E			D	
Queue Length 50th (ft)		301			46			~370			316	
Queue Length 95th (ft)		#521			89			#578			#539	
Internal Link Dist (ft)		965			1070			1292			16527	
Turn Bay Length (ft)												
Base Capacity (vph)		754			748			617			694	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.84			0.23			0.98			0.88	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 86												
Natural Cycle: 80												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.98												

Timings 5: Black Forest Road & Shoup Road

Total Traffic Conditions
Year 2042 - PM Peak Hour

Intersection Signal Delay: 44.9

Intersection LOS: D

Intersection Capacity Utilization 101.5%

ICU Level of Service G

Analysis Period (min) 15





~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: Black Forest Road & Shoup Road

 Ø2	 Ø4
43 s	47 s
 Ø6	 Ø8
43 s	47 s

HCM 6th TWSC
6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle

Total Traffic Conditions
Year 2042 - PM Peak Hour

Intersection												
Int Delay, s/veh	14.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	↕
Traffic Vol, veh/h	95	4	192	4	4	4	235	200	0	9	200	117
Future Vol, veh/h	95	4	192	4	4	4	235	200	0	9	200	117
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	195	-	-	-	-	195
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	103	4	209	4	4	4	255	217	0	10	217	127

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	968	964	217	1134	1091	217	344	0	0	217	0	0
Stage 1	237	237	-	727	727	-	-	-	-	-	-	-
Stage 2	731	727	-	407	364	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	233	255	823	180	215	823	1215	-	-	1353	-	-
Stage 1	766	709	-	415	429	-	-	-	-	-	-	-
Stage 2	413	429	-	621	624	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	189	200	823	110	168	823	1215	-	-	1353	-	-
Mov Cap-2 Maneuver	189	200	-	110	168	-	-	-	-	-	-	-
Stage 1	605	703	-	328	339	-	-	-	-	-	-	-
Stage 2	320	339	-	457	618	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	45.4		25.9		4.7		0.2	
HCM LOS	E		D					



















Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1215	-	-	385	185	1353	-
HCM Lane V/C Ratio	0.21	-	-	0.822	0.071	0.007	-
HCM Control Delay (s)	8.8	-	-	45.4	25.9	7.7	0
HCM Lane LOS	A	-	-	E	D	A	A
HCM 95th %tile Q(veh)	0.8	-	-	7.4	0.2	0	-

Timings

6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle

Total Traffic Conditions

Year 2042 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	4	192	4	4	4	235	200	0	9	200	117
Future Volume (vph)	95	4	192	4	4	4	235	200	0	9	200	117
Satd. Flow (prot)	0	1670	0	0	1750	0	1770	1863	0	0	1859	1583
Flt Permitted		0.886			0.877		0.484				0.984	
Satd. Flow (perm)	0	1504	0	0	1560	0	902	1863	0	0	1833	1583
Satd. Flow (RTOR)		168			4							155
Lane Group Flow (vph)	0	316	0	0	12	0	255	217	0	0	227	127
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	8.0		8.0	8.0	8.0
Minimum Split (s)	10.5	10.5		10.5	10.5		11.0	14.0		14.0	14.0	14.0
Total Split (s)	23.6	23.6		23.6	23.6		15.0	36.4		21.4	21.4	21.4
Total Split (%)	39.3%	39.3%		39.3%	39.3%		25.0%	60.7%		35.7%	35.7%	35.7%
Yellow Time (s)	3.5	3.5		3.5	3.5		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)		5.5			5.5		6.0	6.0			6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)		11.8			11.8		36.7	36.7			21.9	21.9
Actuated g/C Ratio		0.20			0.20		0.61	0.61			0.36	0.36
v/c Ratio		0.73			0.04		0.38	0.19			0.34	0.19
Control Delay		20.5			14.1		8.3	6.9			18.0	3.4
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		20.5			14.1		8.3	6.9			18.0	3.4
LOS		C			B		A	A			B	A
Approach Delay		20.5			14.1			7.6			12.8	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)		48			2		36	30			59	0
Queue Length 95th (ft)		108			12		88	75			127	25
Internal Link Dist (ft)		750			806			16527			4848	
Turn Bay Length (ft)							195					195
Base Capacity (vph)		571			473		689	1138			667	675
Starvation Cap Reductn		0			0		0	0			0	0
Spillback Cap Reductn		0			0		0	0			0	0
Storage Cap Reductn		0			0		0	0			0	0
Reduced v/c Ratio		0.55			0.03		0.37	0.19			0.34	0.19
Intersection Summary												
Cycle Length: 60												
Actuated Cycle Length: 60												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 45												
Control Type: Actuated-Coordinated												

Timings

6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle

Total Traffic Conditions

Year 2042 - PM Peak Hour

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 12.8







Intersection LOS: B

Intersection Capacity Utilization 61.2%

ICU Level of Service B

Analysis Period (min) 15






















Splits and Phases: 6: Black Forest Road & Old Stagecoach Road/Terra Ridge Circle

 Ø2 (L) 36.4 s	 Ø4 23.6 s
 Ø5 15 s	 Ø6 (R) 21.4 s
 Ø5 15 s	 Ø8 23.6 s

Timings

7: Black Forest Road & Hodgen Road

Total Traffic Conditions
Year 2042 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	724	311	121	415	20	227	6	164	49	2	38
Future Volume (vph)	107	724	311	121	415	20	227	6	164	49	2	38
Satd. Flow (prot)	1770	1863	1583	1770	1850	0	1770	1595	0	1770	1596	0
Flt Permitted	0.391			0.134			0.729			0.610		
Satd. Flow (perm)	728	1863	1583	250	1850	0	1358	1595	0	1136	1596	0
Satd. Flow (RTOR)			338		5			178			41	
Lane Group Flow (vph)	116	787	338	132	473	0	247	185	0	53	43	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	11.0	18.0	18.0	11.0	18.0		14.0	14.0		14.0	14.0	
Total Split (s)	11.0	57.0	57.0	11.0	57.0		22.0	22.0		22.0	22.0	
Total Split (%)	12.2%	63.3%	63.3%	12.2%	63.3%		24.4%	24.4%		24.4%	24.4%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Act Effct Green (s)	41.2	37.5	37.5	41.2	37.5		16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.55	0.50	0.50	0.55	0.50		0.22	0.22		0.22	0.22	
v/c Ratio	0.25	0.84	0.35	0.54	0.51		0.82	0.38		0.21	0.11	
Control Delay	6.7	25.8	2.2	14.9	14.5		56.4	8.5		31.6	11.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	6.7	25.8	2.2	14.9	14.5		56.4	8.5		31.6	11.7	
LOS	A	C	A	B	B		E	A		C	B	
Approach Delay		17.6			14.6			35.9			22.7	
Approach LOS		B			B			D			C	
Queue Length 50th (ft)	19	313	0	22	144		115	3		21	1	
Queue Length 95th (ft)	35	466	35	41	216		#298	59		61	29	
Internal Link Dist (ft)		1250			847			4848			905	
Turn Bay Length (ft)	400		335	280			125			65		
Base Capacity (vph)	473	1317	1218	243	1310		301	492		251	385	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.25	0.60	0.28	0.54	0.36		0.82	0.38		0.21	0.11	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 74.8												
Natural Cycle: 75												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.84												

Timings

7: Black Forest Road & Hodgen Road

Total Traffic Conditions

Year 2042 - PM Peak Hour

Intersection Signal Delay: 20.4

Intersection LOS: C

Intersection Capacity Utilization 84.1%







ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.




Queue shown is maximum after two cycles.

Splits and Phases: 7: Black Forest Road & Hodgen Road

 Ø2	 Ø3	 Ø4
22 s	11 s	57 s
 Ø6	 Ø7	 Ø8
22 s	11 s	57 s

HCM 6th TWSC
8: Hodgen Road & Black Forrest Road

Total Traffic Conditions
Year 2042 - PM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1142	680	0	0	0
Future Vol, veh/h	4	1142	680	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	1241	739	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	739	0	-	0	1988	739
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	1249	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	867	-	-	-	67	417
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	270	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	867	-	-	-	66	417
Mov Cap-2 Maneuver	-	-	-	-	66	-
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	270	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	867	-	-	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-	-	-
HCM Control Delay (s)	9.2	0	-	-	0	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	

HCM 6th Roundabout
9: Allen Ranch Road & Old Stagecoach Road

Total Traffic Conditions
Year 2042 - PM Peak Hour

Intersection			
Intersection Delay, s/veh	5.5		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	438	347	68
Demand Flow Rate, veh/h	447	354	70
Vehicles Circulating, veh/h	47	34	405
Vehicles Exiting, veh/h	341	441	89
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.9	5.1	4.8
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	447	354	70
Cap Entry Lane, veh/h	1315	1333	913
Entry HV Adj Factor	0.980	0.980	0.971
Flow Entry, veh/h	438	347	68
Cap Entry, veh/h	1289	1306	887
V/C Ratio	0.340	0.266	0.077
Control Delay, s/veh	5.9	5.1	4.8
LOS	A	A	A
95th %tile Queue, veh	2	1	0

HCM 6th Roundabout
10: Shortwall Drive & Old Stagecoach Road & Stagecoach Road

Total Traffic Conditions
Year 2042 - PM Peak Hour

Intersection			
Intersection Delay, s/veh 5.7			
Intersection LOS A			
Approach	WB	NB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	363	57	485
Demand Flow Rate, veh/h	371	58	494
Vehicles Circulating, veh/h	43	428	30
Vehicles Exiting, veh/h	443	96	384
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.3	4.7	6.2
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LR	LR
Assumed Moves	LR	LR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	371	58	494
Cap Entry Lane, veh/h	1321	892	1338
Entry HV Adj Factor	0.978	0.983	0.982
Flow Entry, veh/h	363	57	485
Cap Entry, veh/h	1292	876	1314
V/C Ratio	0.281	0.065	0.369
Control Delay, s/veh	5.3	4.7	6.2
LOS	A	A	A
95th %tile Queue, veh	1	0	2

APPENDIX D

Warrant Analysis Forms

Standard:

04 The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

- A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or
- B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

Option:

05 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 70 percent columns in Table 4C-1 may be used in place of the 100 percent columns.

Guidance:

06 The combination of Conditions A and B is intended for application at locations where Condition A is not satisfied and Condition B is not satisfied and should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Standard:

07 The need for a traffic control signal shall be considered if an engineering study finds that both of the following conditions exist for each of any 8 hours of an average day:

- A. The vehicles per hour given in both of the 80 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; and
- B. The vehicles per hour given in both of the 80 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

These major-street and minor-street volumes shall be for the same 8 hours for each condition; however, the 8 hours satisfied in Condition A shall not be required to be the same 8 hours satisfied in Condition B. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	56% ^d	100% ^a	80% ^b	70% ^c	56% ^d
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

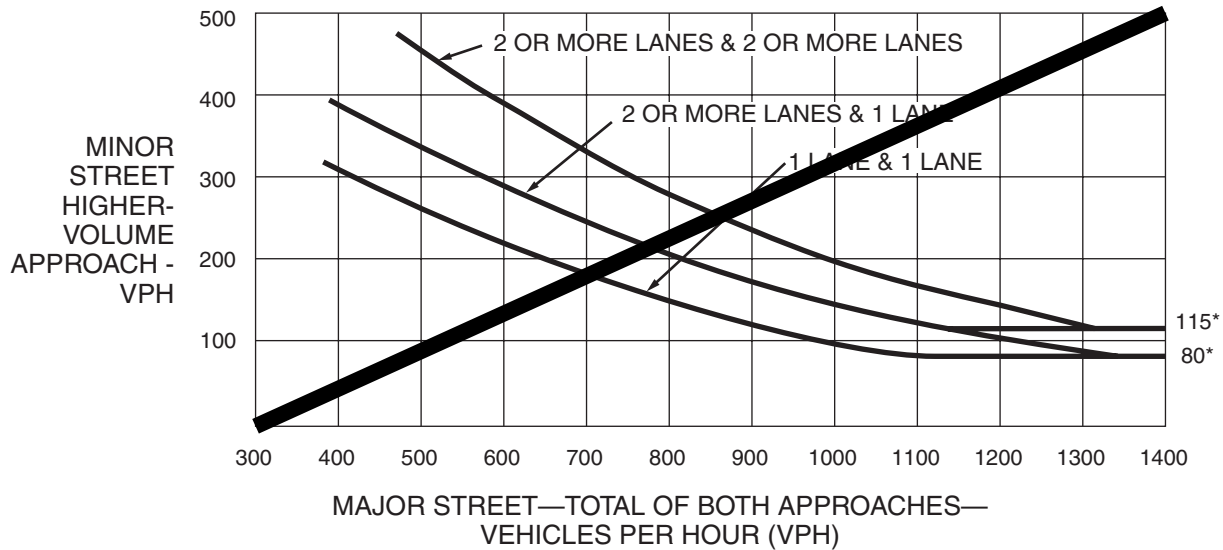
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	56% ^d	100% ^a	80% ^b	70% ^c	56% ^d
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

^a Basic minimum hourly volume

^b Used for combination of Conditions A and B after adequate trial of other remedial measures

^c May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

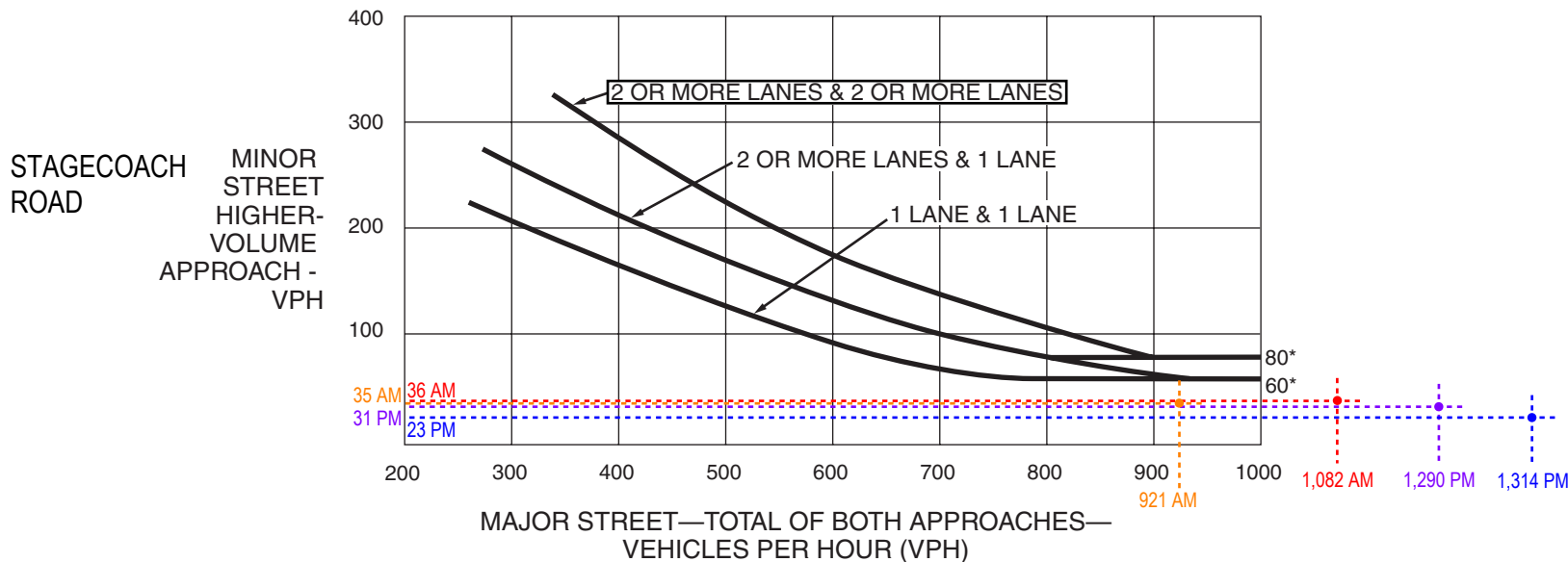
^d May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Key:

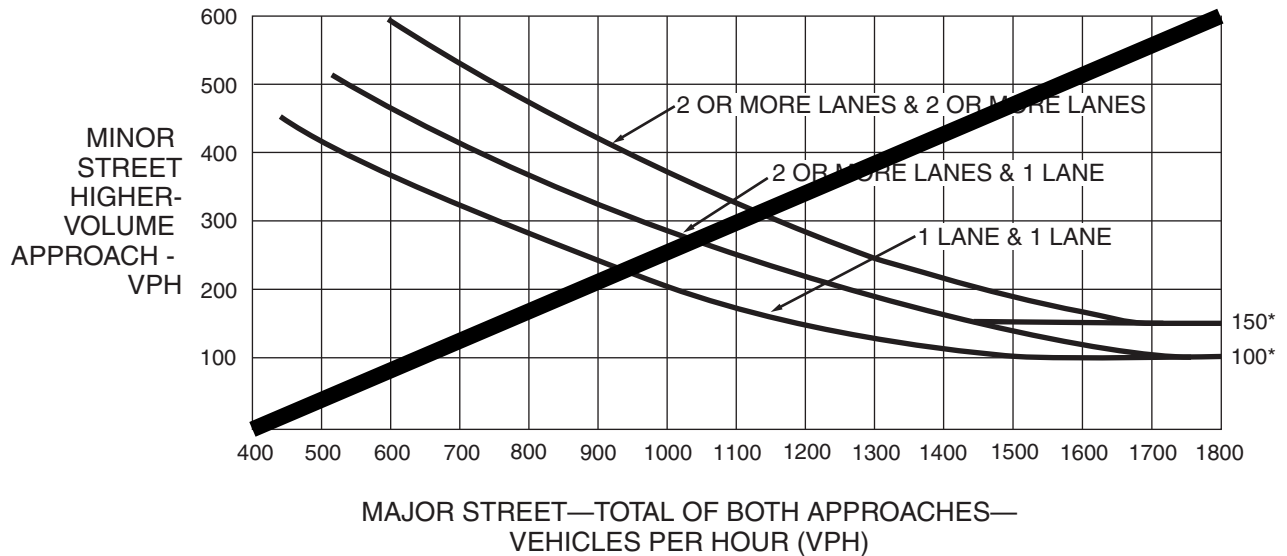
7:00 AM - 8:00 AM

8:00 AM - 9:00 AM

4:00 PM - 5:00 PM

5:00 PM - 6:00 PM

STATE HIGHWAY 83 (55 MPH)

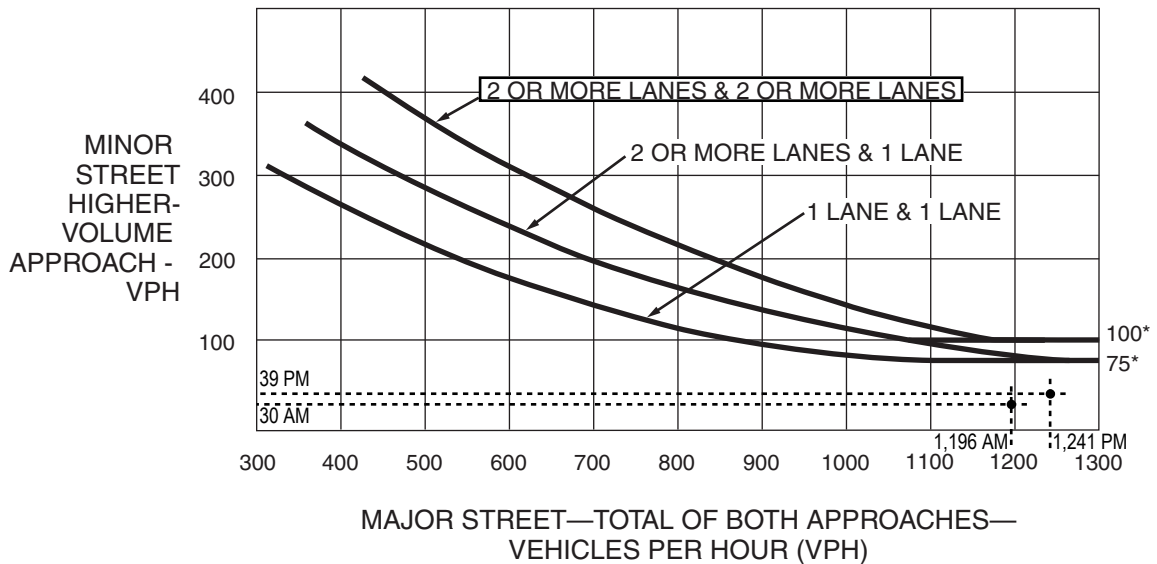
Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

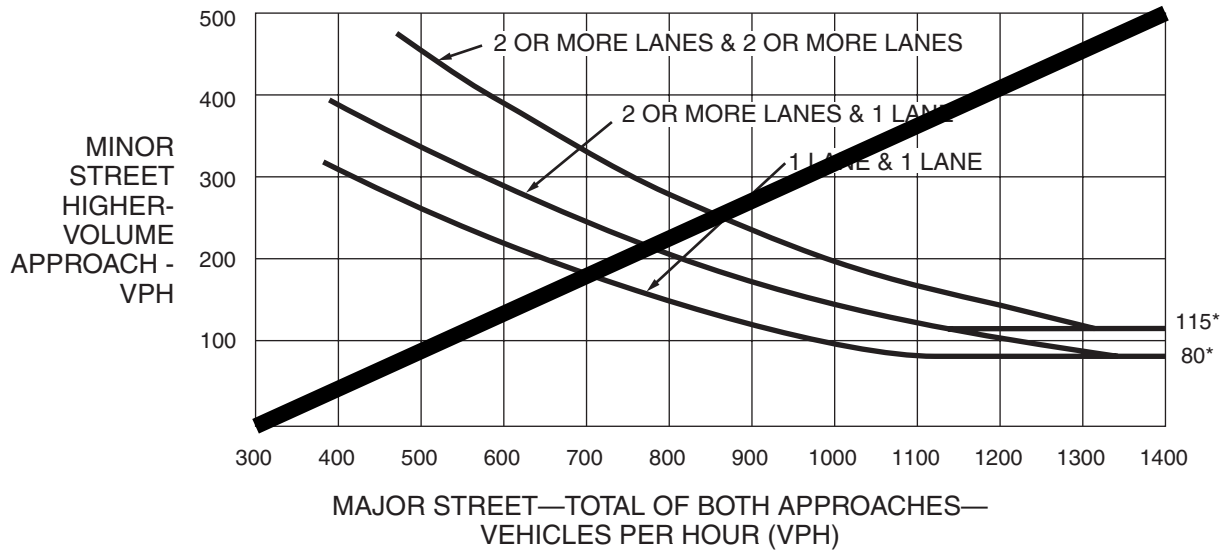
STAGECOACH ROAD



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Note: No right turn reduction applied.

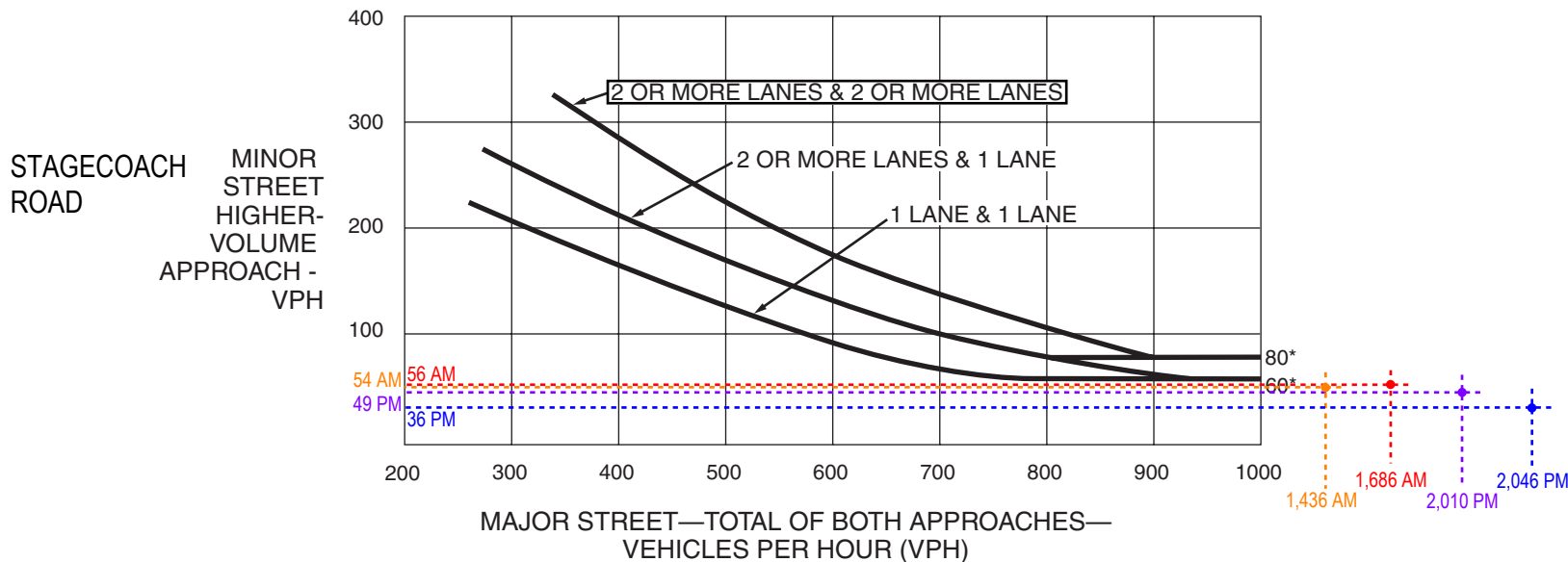
STATE HIGHWAY 83 (55 MPH)

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Key:

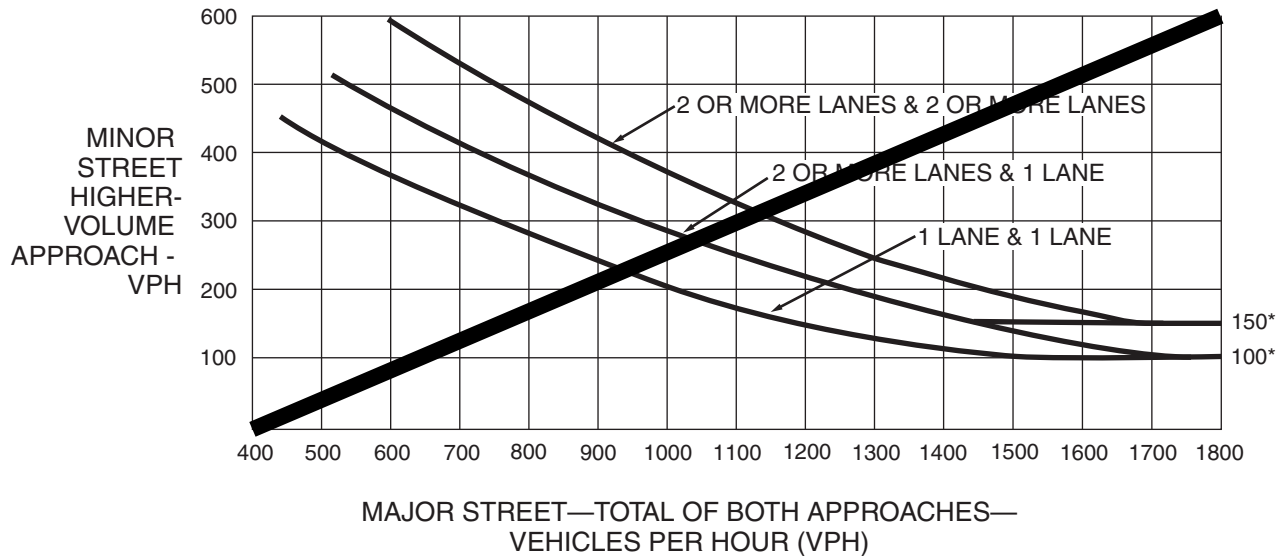
7:00 AM - 8:00 AM

8:00 AM - 9:00 AM

4:00 PM - 5:00 PM

5:00 PM - 6:00 PM

STATE HIGHWAY 83 (55 MPH)

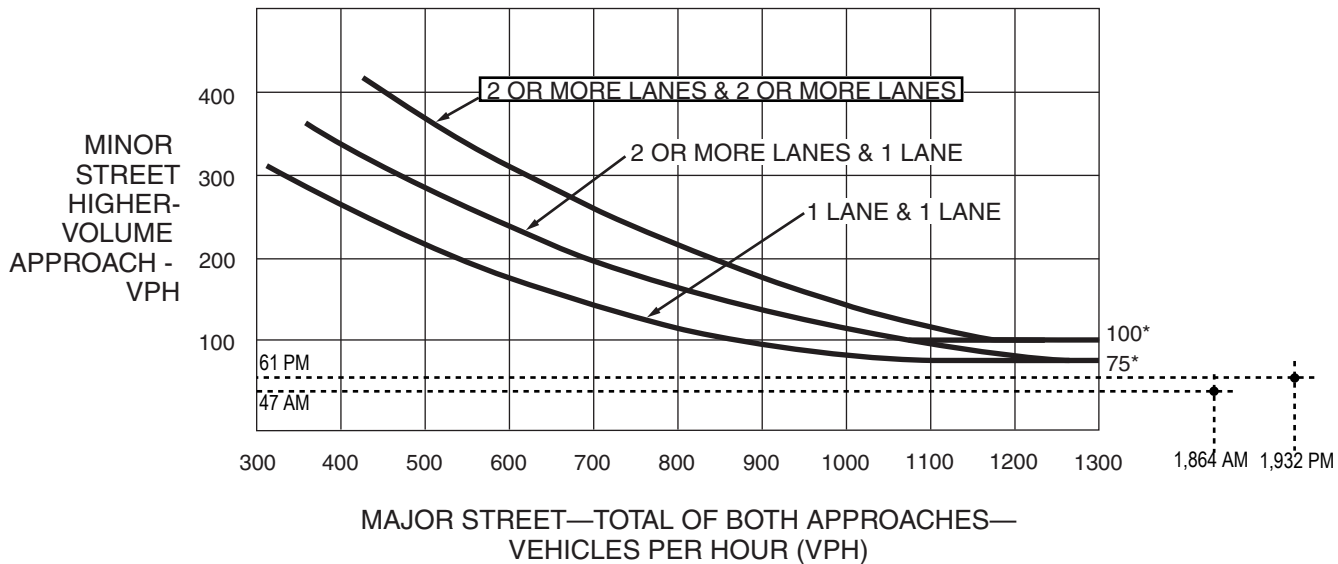
Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

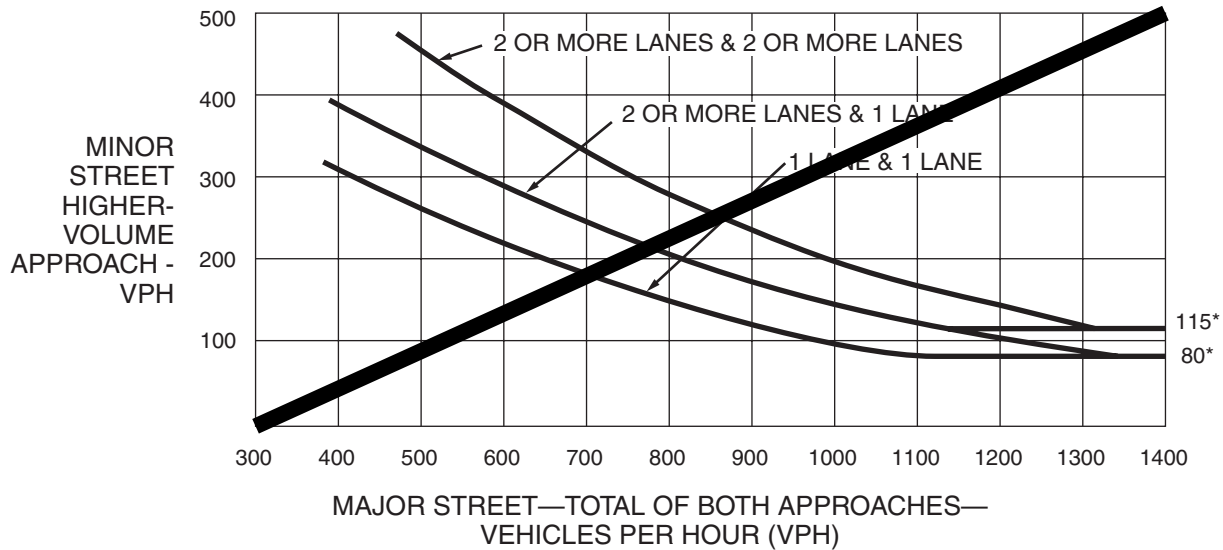
STAGECOACH ROAD



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Note: No right turn reduction applied.

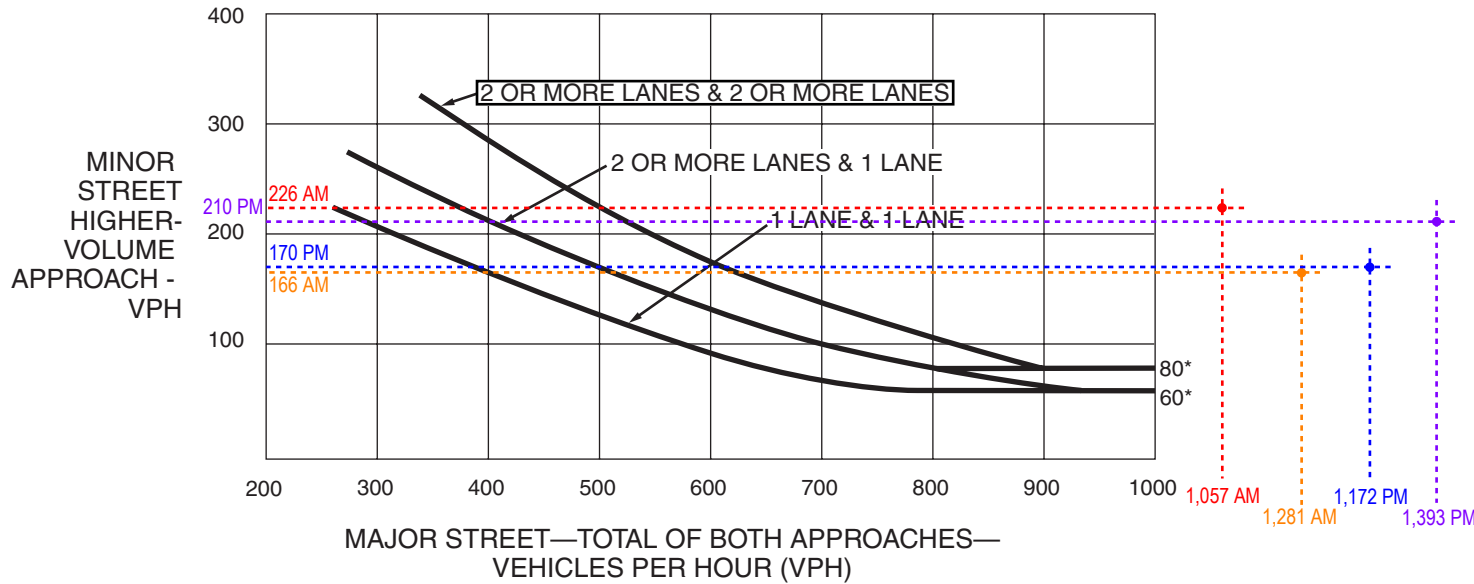
STATE HIGHWAY 83 (55 MPH)

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Key:

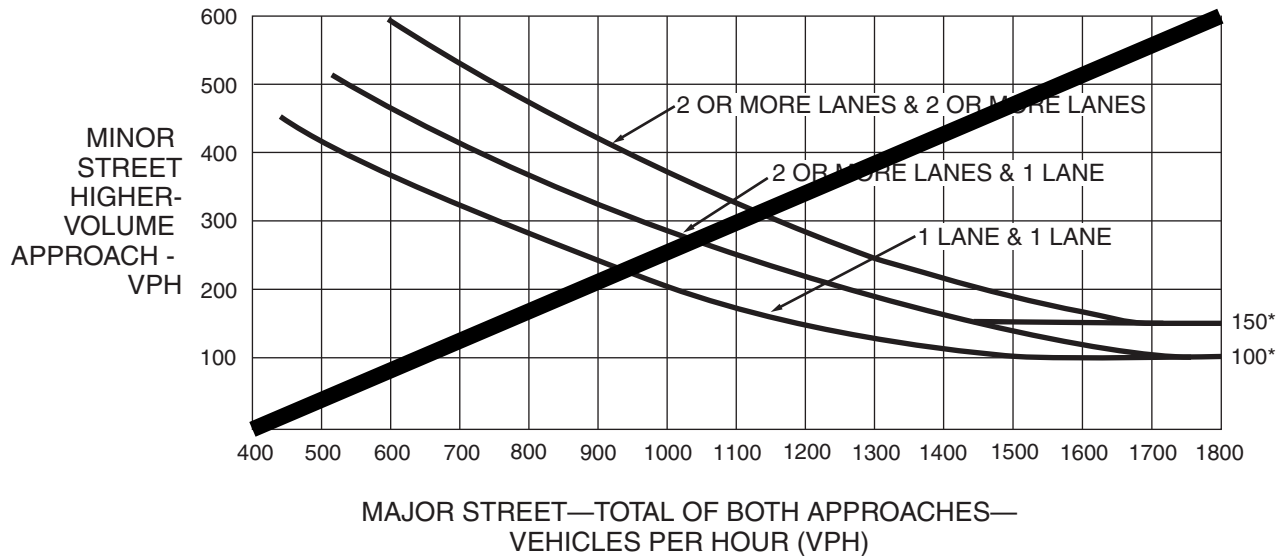
7:00 AM - 8:00 AM

8:00 AM - 9:00 AM

4:00 PM - 5:00 PM

5:00 PM - 6:00 PM

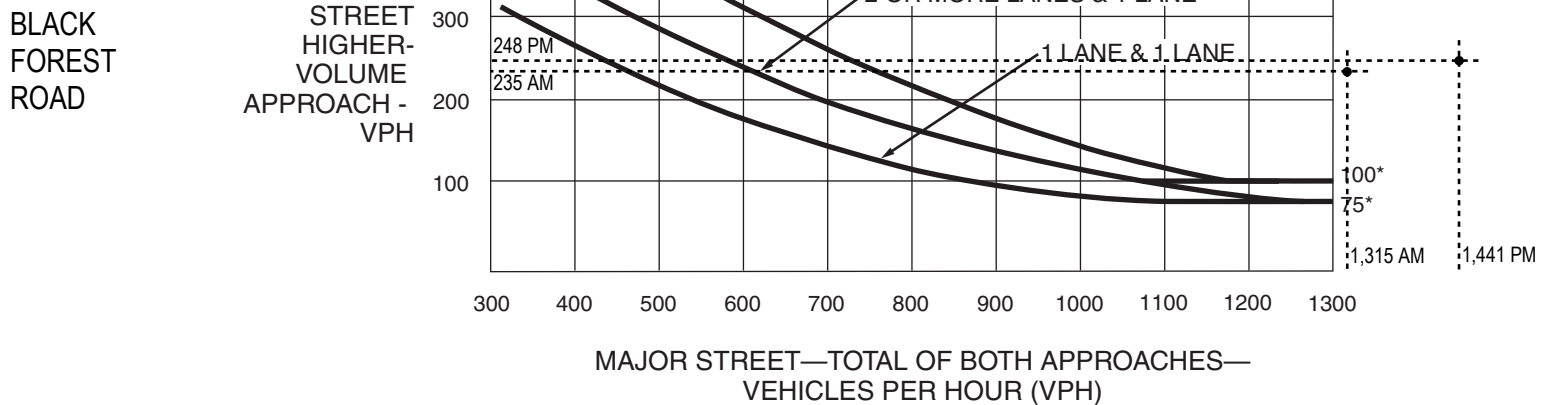
HODGEN ROAD (55 MPH)

Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

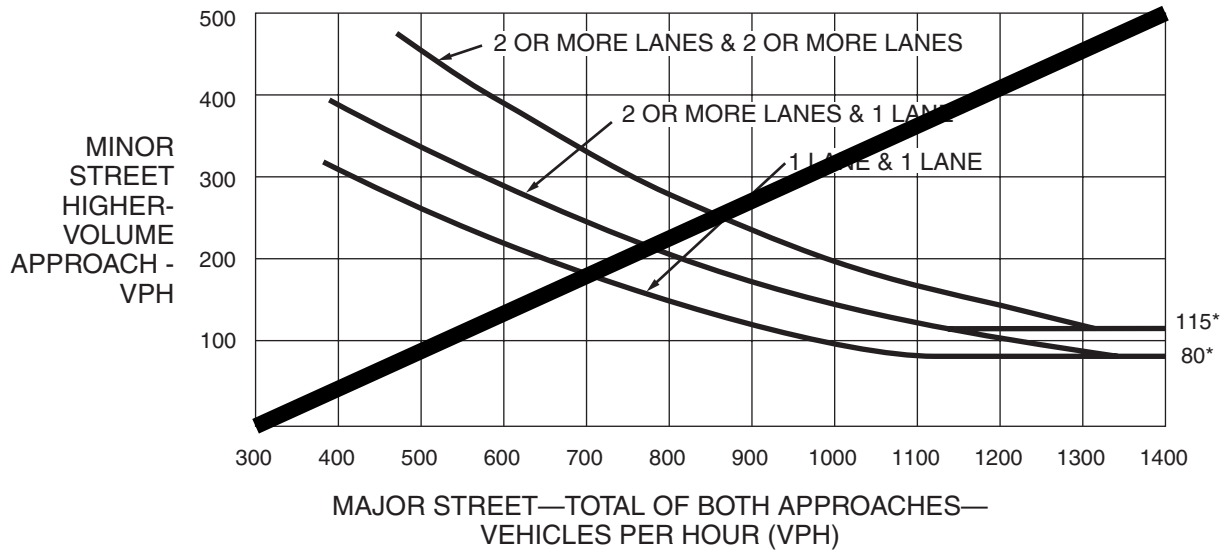
Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

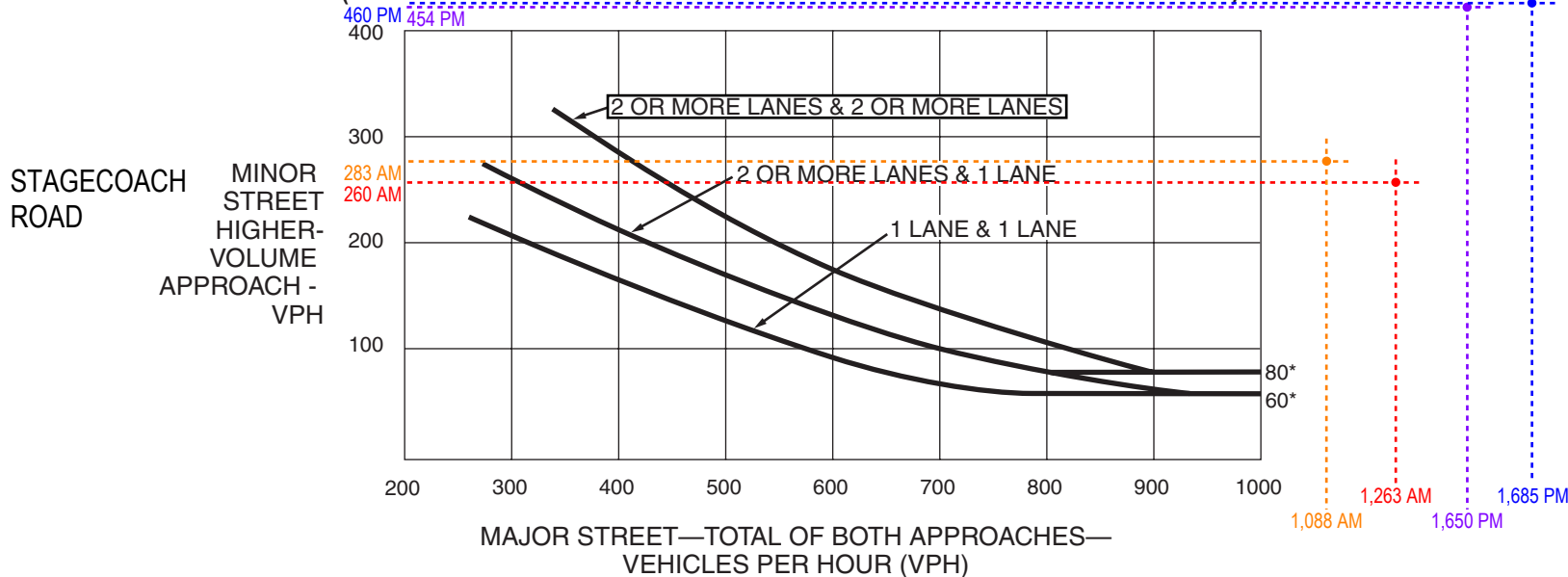
Note: No right turn reduction applied.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Key:

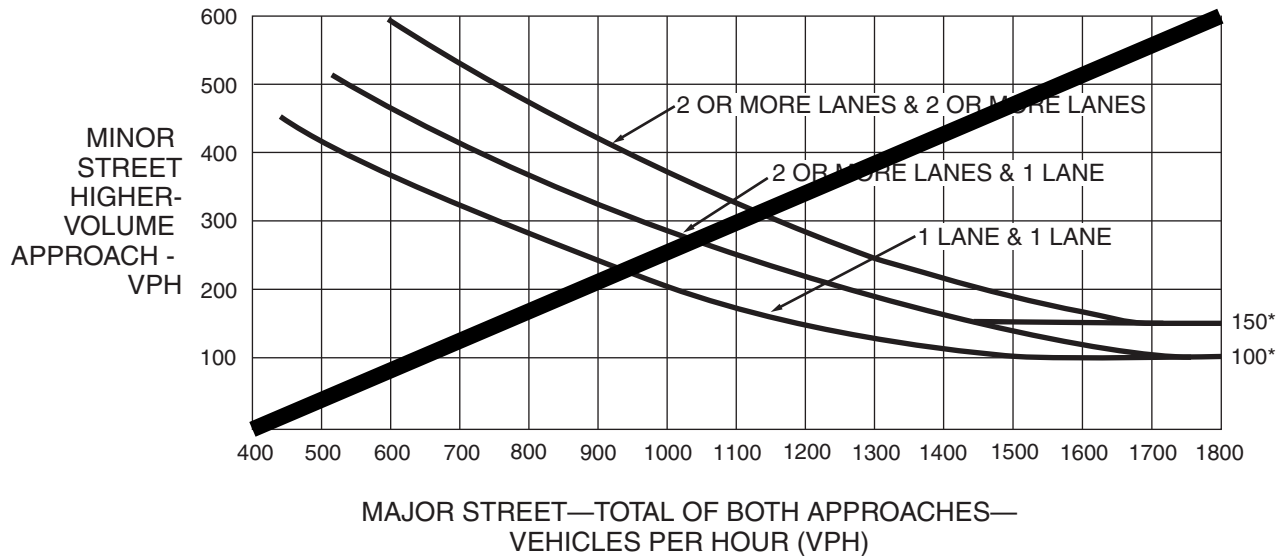
7:00 AM - 8:00 AM

8:00 AM - 9:00 AM

4:00 PM - 5:00 PM

5:00 PM - 6:00 PM

STATE HIGHWAY 83 (55 MPH)

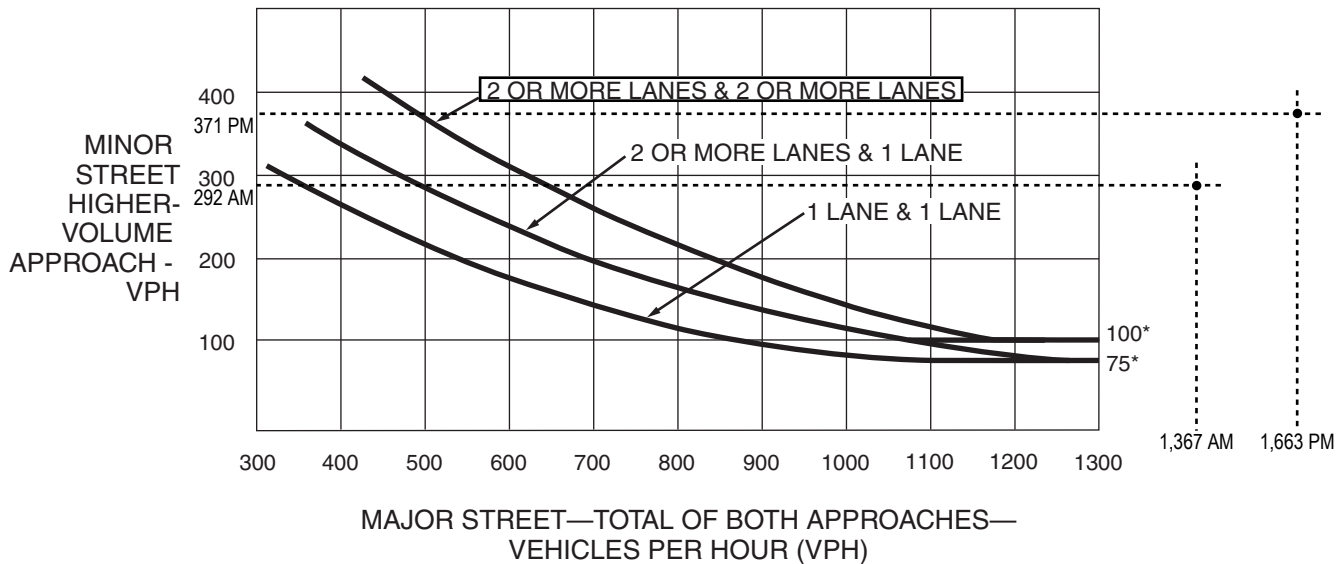
Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

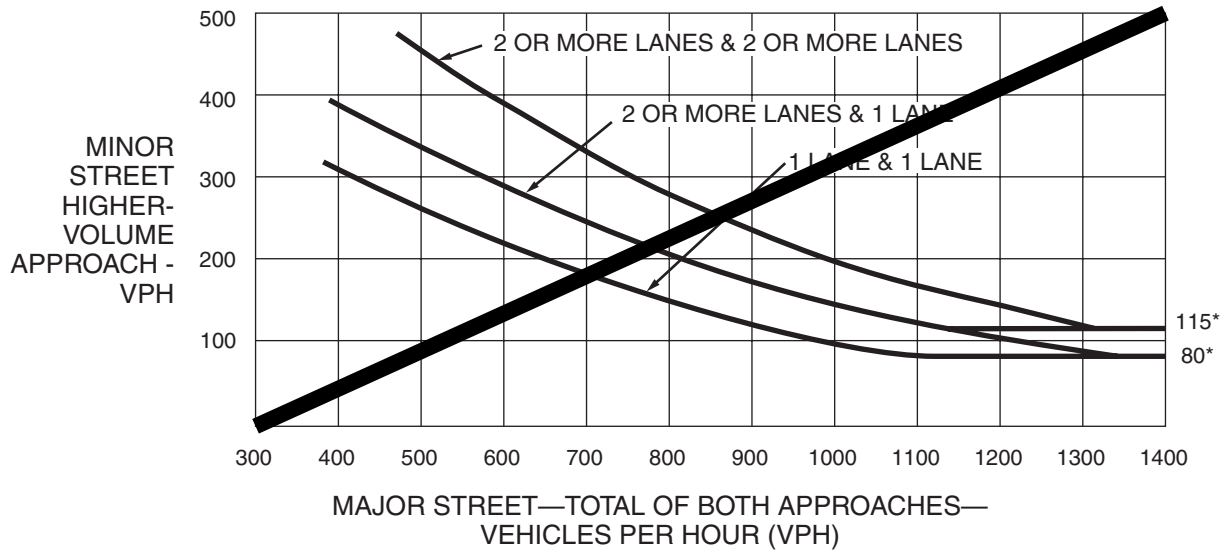
STAGECOACH ROAD



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Note: No right turn reduction applied.

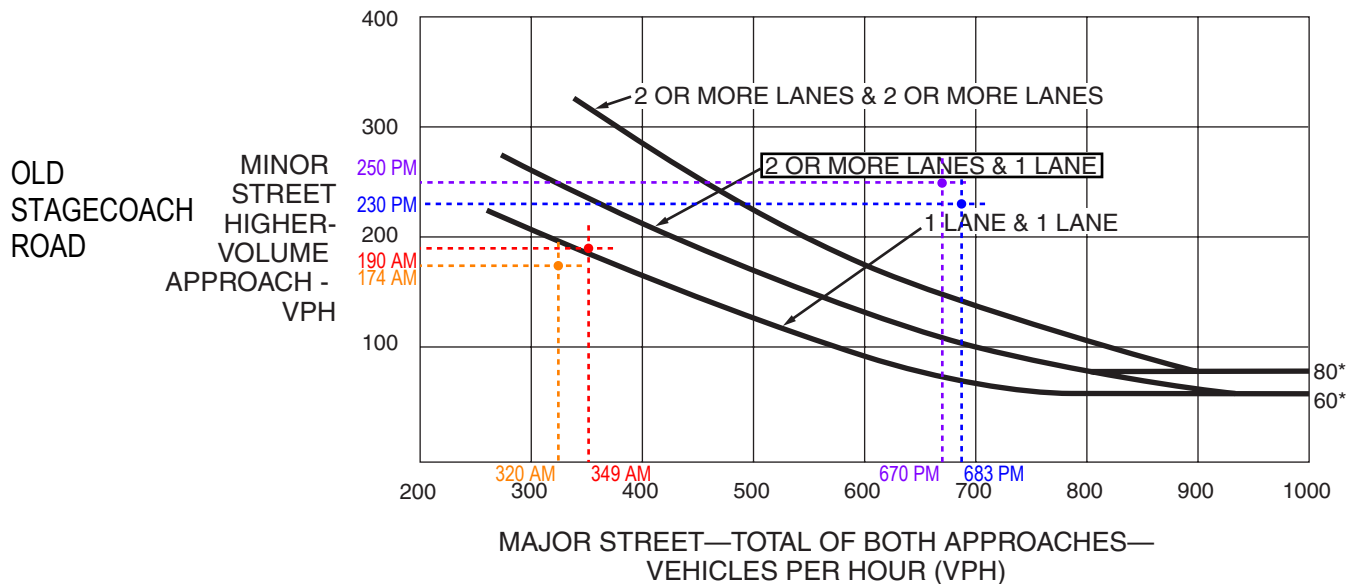
STATE HIGHWAY 83 (55 MPH)

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Key:

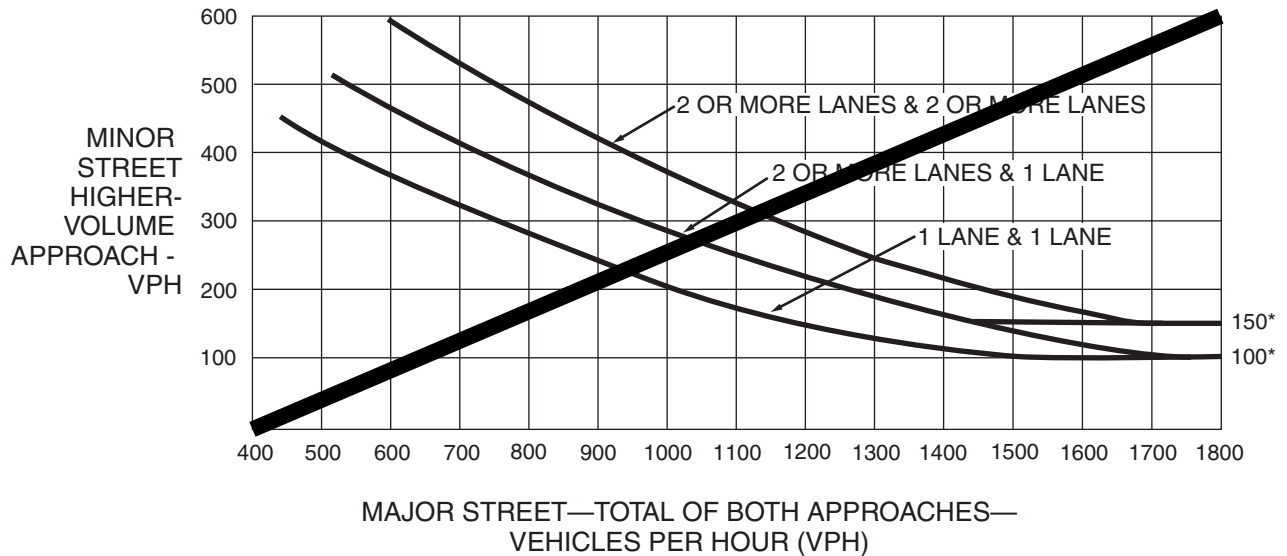
7:00 AM - 8:00 AM

8:00 AM - 9:00 AM

4:00 PM - 5:00 PM

5:00 PM - 6:00 PM

BLACK FOREST ROAD (45 MPH)

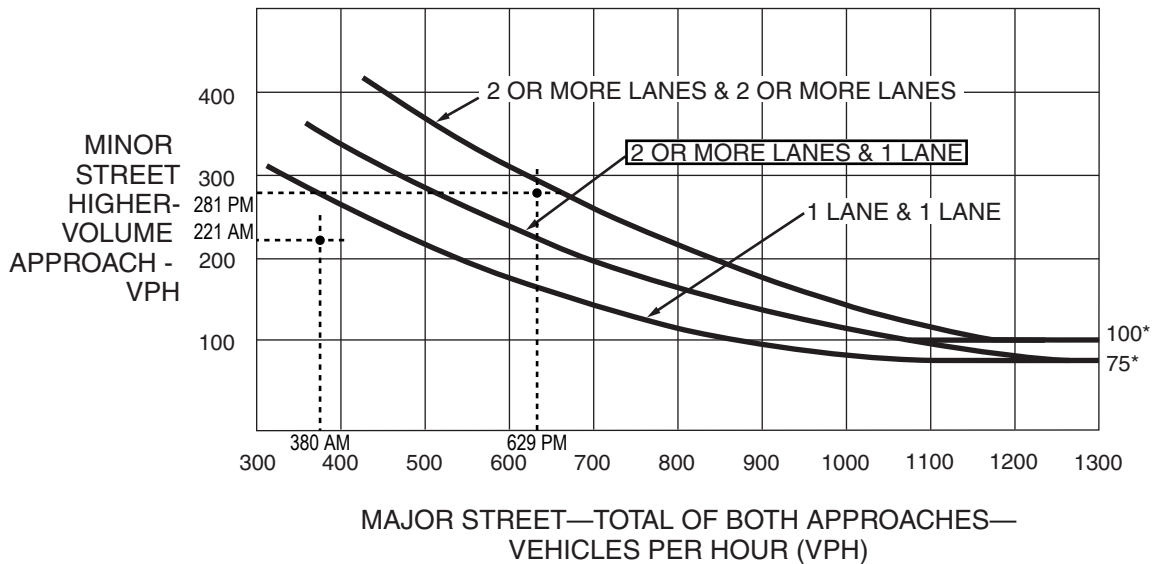
Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

OLD STAGECOACH ROAD



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Note: No right turn reduction applied.

BLACK FOREST ROAD (45 MPH)